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Codex forges ahead with frame relay

By Paul Desmond
Senior Editor

MANSFIELD, Mass. — Codex Corp. last week announced a new frame relay PAD and frame relay interfaces for its two T-1 multiplexers and one of its packet switches. All of the products are scheduled to ship next quarter.

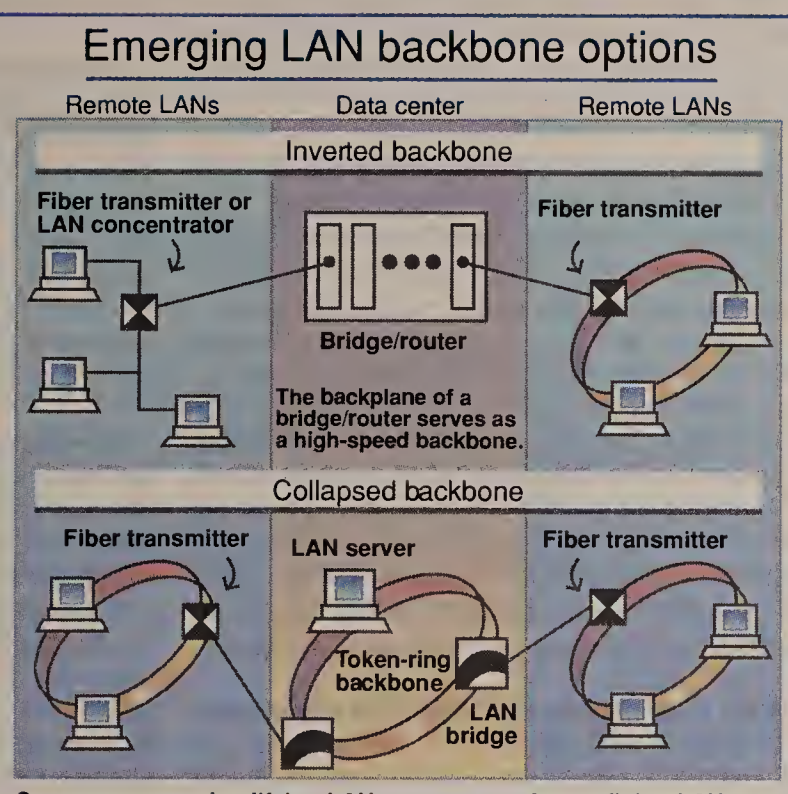
The announcement puts Codex at the front of the pack in terms of frame relay support since few companies have announced ship dates and pricing for promised products.

It also makes Codex the first to offer both the backbone nodes that support frame relay and the devices that feed data to those nodes, all supported under a single net management system.

Codex's parent, Motorola, Inc., the first user of the new products, reported positive results in a test linking a Codex frame relay interface on a T-1 multiplexer with one on a cisco Systems, Inc. bridge/router. The company said it expects frame relay to improve bandwidth utilization on its T-1 backbone by 50%.

Codex is providing frame relay support on its 6290 T-1 multiplexer — marketed as part of an OEM agreement with StrataCom, Inc. — with a two-card interface consisting of a Frame Relay Pack-

(continued on page 59)



Some users are simplifying LAN management by confining LAN backbones, internetwork equipment and servers in their data centers. Remote subnets are extended to the backbone instead of the reverse.

GRAPHIC BY SUSAN J. CHAMPENY

New LAN backbone designs simplify net management

By Paul Desmond
Senior Editor

A handful of users are bucking traditional campus LAN backbone design by inverting or collapsing their backbone nets to confine critical network hardware to a central location where it can be easily managed.

Rather than snaking local-area network backbones in and around buildings to link subnetworks, the users are installing backbones in their data centers and using bridges and routers to support fiber or copper cable runs out to subnets in a star topology.

The benefit, they say, is that this type of configuration is easier to manage. Devices most likely to fail are in one room rather than in far-flung wiring closets and remote buildings.

There are two main ways to configure such nets. Collapsed backbones are housed complete-

(continued on page 60)

Court decision casts cloud over Tariff 12

Federal appeals court overturns FCC approval of AT&T custom nets, orders reexamination of issue.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — A federal appeals court last week overturned the Federal Communications Commission's April 1989 decision allowing AT&T to offer custom networks through Tariff 12 and ordered the agency to reopen its investigation into the legality of the deals.

In a 25-page opinion, which included blunt criticism of the Tariff 12 order, a three-judge panel said the agency erred in allowing Tariff 12 deals to go into effect. The court said the FCC considered improper factors in deciding that AT&T could charge lower rates for services packaged under Tariff 12 than for the services sold separately.

"We have the impression that there is an air of unreality about this case," the judges said. "The FCC will undoubtedly permit AT&T to compete effectively against its competitors in the large user market, but we are obliged to insist that it do so by turning square corners of administrative law."

The judges also said the FCC failed in its responsibility to resolve a number of other legal issues, including whether price differences between different Tariff 12 packages are justifiable.

Although the court's decision casts a cloud of legal uncertainty over Tariff 12, numerous telecommunications attorneys said existing Tariff 12 deals will not be

(continued on page 5)

INSIDE

Designing token-ring nets for SNA, page 45.

Users paying big price for PBX fraud

By Wayne Eckerson
Senior Editor

NEW YORK — Armed with pirated private branch exchange access codes, street corner hustlers are sticking U.S. companies with millions of dollars in fraudulent phone charges.

Hustlers are running "call-sell" operations in which they tap into corporate PBXs and sell phone service at discount rates, primarily to immigrants who want to make calls back home.

Over a three-day weekend, hustlers can gross $7,000 to $10,000 in profits and stick unsuspecting companies with telephone bills of $25,000 or more. Some companies have suffered losses in excess of $700,000 to fraudulent calling, according to Jim Snyder, an attorney for MCI Communications Corp. and a

(continued on page 59)

NETLINE

NEWSPAPER

EMA WHITE PAPER recommends companies adopt formal E-mail privacy policies. Page 2.

REVLON IS KNOCKED off-line when an irate software maker 'repossesses' pack over phone lines. Page 2.

OSF FINALLY UNVEILS its open operating system. Page 2.

CHANGES TO EDIFACT standard hold up Customs Service clearance system. Page 3.

PARALLAN TOUTS new LAN servers as more powerful than superservers. Page 4.

NYNEX UNITS file tariffs to offer BRI next year. Page 4.

AT&T PLANS TO support frame relay on its Datakit II VCS. Page 5.

FEATURE

New methods help ease net worker shortages

By Salvatore Salamone
Features Writer

Networking, like nature, abhors a vacuum. Lately, the networking vacuum has increased. What is the vacuum? People.

Managers are finding it increasingly difficult to find the skilled employees they need, forcing them to take various emergency measures.

Trends and TECHNOLOGIES RESHAPING networks:

Top managers of major networks have complained about recruitment difficulties for years, but now the staff shortages seem to be worsening.

Perennial problems in finding skilled networking technicians have contributed to other trends: skyrocketing interest in network management, a boom in outsourcing, centralization of network control, the emergence of the network help desk and, inevitably, the search for ways to replace human expertise with processor-based ex-

(continued on page 38)

EMA urges users to adopt policy on E-mail privacy

Association releases white paper raising issues companies should address before setting policy.

By Bob Brown
Senior Editor

SAN FRANCISCO — The Electronic Mail Association (EMA) last week issued a white paper recommending that companies adopt a formal policy regarding E-mail privacy in order to foster trust among employees and protect themselves from lawsuits.

The paper, which was commissioned by the EMA's board of directors, did not offer an EMA position on whether companies should tailor E-mail policies to condone employers' need to access data or institute strict policies to protect employees' privacy rights. Rather, it proposed a series of questions that organizations should raise when creating a privacy policy (see graphic, page 60).

"A company should have a policy with regard to protection of its employees' privacy, and it should tell employees what that policy is," the paper stated.

The paper went on to say that "employers should establish privacy policies that deal with all media of communication used by employees, rather than singling out E-mail as if it posed some unique threat to privacy."

Written by privacy law experts John Podesta of Podesta Associates, Inc. in Washington, D.C. and David Johnson of Wilmer,

(continued on page 60)

Small software firm wages war on Revlon order net

'Repossesses' software over telephone network.

By Maureen Molloy
Staff Writer

SANTA CLARA, Calif. — Two of Revlon, Inc.'s major distribution centers were knocked out for three days last week when a small software company dialed into the cosmetic giant's computers and "repossessed" software for which it claims Revlon hadn't paid.

Using an access code to Revlon's computers, Logisticon, Inc., a small Silicon Valley software developer, disabled its software and prevented the warehouses from processing inventory and sales orders, as well as from distributing products to the market.

Revlon's Edison, N.J., and Phoenix distribution centers "were brought to a standstill," said James Conroy, special counsel and vice-president of public affairs at Revlon. Conroy said the two sites usually record millions of dollars in sales daily.

Revlon has filed suit against Logisticon in Santa Clara County Superior Court and is seeking unspecified compensatory and punitive damages for the shutdown.

Revlon is also charging that Logisticon activated viruses that, unknown to Revlon, had been planted in the software, making Revlon's data incomprehensible.

Logisticon President Donald Gallagher said the move was the

(continued on page 61)

OSF unwraps long-awaited OSF/1 operating system

By Jim Brown
Senior Editor

NEW YORK — The Open Software Foundation (OSF) last week released its long-awaited OSF/1 operating system, which the group claimed will be a key component in supporting future client/server and distributed computing applications.

Under development for 2½ years, OSF/1 incorporates many popular Unix networking tools, including the Transmission Control Protocol/Internet Protocol software being built into the latest Berkeley Software Distribution (BSD) Unix implementation, BSD Version 4.4.

It also includes a list of application program interfaces (API), as well as integral support for OSF's emerging Distributed Computing Environment (DCE), a set of tools that enable an application on one system to transparently tap into other computing resources on a network.

OSF's original charter was to develop a common, Unix-based operating system that could run on various hardware platforms, a goal that was reached with the release of OSF/1. But the group has broadened its mission, as illustrated by the incorporation of DCE into OSF/1.

(continued on page 5)

Briefs

High-speed research net gets funds. Congress last week approved $35 million in funding for a high-speed computer network to link researchers around the country. Although the network, as envisioned by longtime backer Sen. Al Gore (D-Tenn.), could cost as much as $390 million, the initial $35 million would allow the project to begin. Gore's supercomputer bill, which actually authorizes the network, was unanimously passed in a Senate vote but still faces House approval.

Bank-to-bank outsourcing deal. Dollar-Dry Dock Savings Bank of New York last week announced that Mellon Bank Corp. of Pittsburgh will manage its information systems and network in a six-year, multimillion-dollar outsourcing deal.

In one of the first bank-to-bank outsourcing deals, Dollar-Dry Dock will migrate bank applications supporting its 23 branch offices in the New York metropolitan area to Mellon's mainframe computers in Pittsburgh. In addition, Mellon will provide software development and maintenance for Dollar-Dry Dock. Eventually, Dollar-Dry Dock will replace or enhance many of its current bank applications with products offered by Mellon's data center, which operates as a profit center for the bank.

AT&T safeguards 800, 900 services. AT&T recently introduced an optional feature for its 800 and 900 services that enables backup network data bases to perform emergency number translation if the primary data base is damaged or disabled. The feature, Alternate Number Translation (ANT), is available as an option with AT&T 800 and MultiQuest. AT&T is selling storage space on the backup data bases on a first come, first served basis. Users pay a $500 onetime charge for each number, a $500 charge each time the number is changed and $500 a month for each number in the data base. ANT should be available on Dec. 1.

X.400: Networking networks. MCI Communications Corp. last week announced an X.400 interconnection agreement with British Telecommunications PLC through which MCI will link its MCI Mail service to British Telecom's Gold 400 service on Dec. 1. MCI also announced X.400 interconnection agreements with electronic mail service providers in Denmark, Finland and Norway.

In related news, Western Union Corp. announced X.400 interoperability between its Western Union 400 service and Wang Laboratories, Inc.'s Office/X.400 Gateway. Western Union also said it has signed an agreement to interconnect its E-mail system with Denmark's Dataport 400 electronic messaging service.

Pacific Bell rolls out E-mail. Pacific Bell announced an X.400-based electronic mail service called Pacific Bell Connection last week at the Electronic Messaging '90 conference in San Francisco. The service is available now in San Francisco and will be made available in other California markets in January 1991. Pacific Bell will link its service to other E-mail services, the first of which is US Sprint Communications Co.'s SprintMail. Pacific Bell Connection costs $5 per month, plus usage charges.

Armenia to be gateway to East. AT&T last week announced plans to ship a 5ESS central office switch and satellite earth station to Soviet Armenia. The equipment will be used by the republic's telephone agency as an international gateway for communications to the U.S., providing an alternative to routing traffic through Moscow, which is currently the only international gateway in the Soviet Union. An AT&T spokesman said Armenia is the only republic that has permission to operate its telephone net independent of the central government.

US Sprint's VPN reaches northward. US Sprint Communications Co. has expanded its Virtual Private Network (VPN) service to serve Canada. The service, which is available now, will be offered in cooperation with Unitel Communications, Inc., Canada's national telecommunications carrier. The two firms have agreed to link their virtual network services and conduct joint planning to ensure they can offer VPN features such as seven-digit dialing.

Teleport rolls out ISDN. The TC Systems, Inc. division of the Teleport Communications Group in New York last week demonstrated an Integrated Services Digital Network Basic Rate Interface service it plans to begin offering commercially in the first quarter of next year. The service will initially be targeted at users that want BRI access to international network facilities.

CONTENTS

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Customs clearance system based on EDIFACT hits standards snags

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — A U.S. Customs Service plan to implement a clearance system based on the EDIFACT electronic data interchange standard has been delayed for almost a year.

The holdup comes because the international standards body responsible for EDI for Administration, Commerce and Transport has deferred approval of about two dozen EDIFACT transaction sets until minor changes are made.

Customs officials last week said the EDIFACT-based import clearance system, which was expected to be operational this fall, will not be fully implemented until September 1991.

But they emphasized that tests with EDIFACT are under way and users, such as ICI Americas, Inc., are already clearing goods electronically using the customs declaration (CUSDEC) message.

CUSDEC, developed by the Customs Service, allows importers to electronically file information required by customs on goods being brought into the U.S. Use of CUSDEC is designed to make customs clearing a paperless process.

In lieu of filling out a paper form, the importer or broker uses a personal computer to key in information and send the CUSDEC form electronically to customs, where the information is processed on a mainframe. If the information is satisfactory, the department issues a paperless release that enables the importers to move the goods through customs.

The EDIFACT-based system is seen as an improvement over the current Customs Service EDI system, Automated Broker Interface (ABI), because the information is consolidated into one message and no paper backup is required. EDIFACT is also an international standard, not a proprietary message set like ABI.

Although the United Nations Working Group IV, the standards group responsible for EDIFACT, had earlier planned to approve CUSDEC and roughly two dozen other EDIFACT messages before the end of this year, it decided that some modifications to the messages were necessary before final approval.

CUSDEC is now tentatively approved, with full approval expected by September. Currently, only three EDIFACT messages have received full U.N. approval.

Dale Snell, program manager with the Customs Service's Office of Trade Initiatives, said the delay in the standards process should not deter companies from readying for the advent of EDIFACT. "There are users that are preparing and not waiting," he said.

ICI Americas, which has been involved with EDIFACT tests since last spring, has cleared 600 paperless entries with CUSDEC.

Charles Arnone, assistant director of international distribution for the Wilmington, Del., import/export firm, said the CUSDEC tests have been a success.

"It's had its hiccups, but in general, it's going well," he said. "From the time of the purchase order to the closing of the customer's file, it's a paperless entry."

Arnone said ICI Americas even pays customs the required service fees electronically through the new Customs Service Automated Clearing House electronic payments system.

Motorola unit develops fast wireless LAN

By Tom Smith
Senior Writer

NEW YORK — Motorola, Inc.'s Radio-Telephone Systems Group last week said it has developed high-speed wireless local-area network technology that can be used to complement or replace cable-based LANs.

The Wireless In-building Network (WIN) technology, based on radio equipment developed by Motorola, operates at 15M bit/sec, more than seven times faster than the speeds supported by existing wireless LANs.

Motorola announced WIN at a press conference here and said it would introduce its first products incorporating the technology in the first quarter of 1991, although the company provided few details about those offerings.

Motorola said it achieved the 15M bit/sec speed breakthrough by miniaturizing radio equipment whose size and cost have been prohibitive in the past.

The company developed several components using CMOS and gallium arsenide semiconductor technology to overcome technical barriers associated with radio transmission at 18 GHz, the frequency required for 15M bit/sec and higher transmission rates, according to Rick Lane, senior manager of advanced systems at Motorola.

WIN's 18-GHz radio, for example, consists of five integrated circuits that take up roughly the same amount of space as a deck of cards. Using existing technology to

(continued on page 5)

New York Tel and N.E. Tel file tariffs for ISDN BRI

But Nynex scales back plan for BRI deployment.

By Bob Wallace
Senior Editor

WHITE PLAINS, N.Y. — New York Telephone Co. and New England Telephone and Telegraph Co. have filed tariffs with their respective public utilities commissions to offer Integrated Services Digital Network Basic Rate Interface (BRI) service starting in January.

Although the news represents a step forward, Nynex Corp., the parent company of the two Bell operating companies, has actually scaled back its BRI deployment plans by 50%. A Nynex official said in July that Nynex would offer BRI service from 25 central offices by year end. Now the carrier says it will only offer BRI through 12 offices by that time.

Nynex estimates that by the end of next year, the Nynex Basic Exchange Service will be available through 22 central offices in New York and Boston and 80 switches throughout the Nynex region.

The company has also delayed the planned filing date for ISDN Primary Rate Interface service from early next year to the second quarter of 1991.

The New York Telephone and New England Telephone BRI tariffs offer a general pricing structure for ISDN service, but Nynex will use customer-specific arrangements to provide off-tariff prices for users that want more than 500 Centrex BRI lines, according to Donald Lane, Nynex's director of ISDN.

Nynex now offers BRI service on a nontariffed basis to a handful of customers.

Users voice approval

User reaction to news of the telephone companies' filings was decidedly positive.

"ISDN is certainly in our future," said Phillip Verdi, executive vice-president of electronic services for MasterCard International, Inc. in New York. "We'll probably use ISDN to [support] quicker data base lookups at our customer service center."

MasterCard may also use ISDN as an enabling technology to support an automated teller machine locater application, Verdi said. "We could use [caller identification] to find the ATM nearest to the customer. With ISDN, an agent could have the address of the ATM closest to the caller on the terminal screen before the call actually arrives."

Other users were equally positive. "Any kind of ISDN equipment or service pricing, or pricing framework helps communications managers make a business case for ISDN," said James Briggs, telecommunications manager for Eastman Kodak Co. in Rochester, N.Y. "It also keeps the ISDN industry moving forward."

Nynex's ISDN BRI tariff includes one rate structure for digital Centrex users and a second scheme for all other businesses.

New York Telephone and New England Telephone will charge customers a onetime $5 fee to equip their access lines to support ISDN BRI and offer Centrex users the following features:

- Alternate voice- and circuit-switched data at 64K bit/sec over a B channel for $28 a month using data-over-voice technology.
- Packet-switched data at 64K bit/sec over either of the two B channels for $99 a month.
- Packet-switched data at 9.6K bit/sec over the D channel for $11 a month.

The two BOCs will offer non-Centrex users alternate voice- and circuit-switched data at 64K bit/sec over a B channel for $22 a month, packet-switched data over either B channel for $75 a month or 9.6K bit/sec service over the D channel for $8 a month.

The BOCs charge Centrex users more for BRI because they include in the charges intercom calling between stations served by the same central office.

Parallan releases line of 80486-based 'hyperservers'

By Tom Smith
Senior Writer

MOUNTAIN VIEW, Calif. — Parallan Computer, Inc. last week unveiled a family of fault-tolerant LAN servers, designed to run OS/2 LAN Manager, that the company claims are more powerful than superservers.

Parallan's Server 290 processors, which the company describes as hyperservers, are based on a mix of Intel Corp. 80486 and Reduced Instruction Set Computer (RISC) microprocessors. The servers use a dual-bus architecture and can support redundant components, including Small Computer System Interface (SCSI) controllers, to provide fault tolerance.

The server is targeted at users with mission-critical applications that are currently running on mainframes, such as on-line transaction processing (OLTP) systems used by banks or airlines, Parallan officials said.

Server 290 models are based on a 64-bit, 200M byte/sec Inter-Processor Bus supporting system memory, a system management interface and one or two dual-channel SCSI storage controllers.

The InterProcessor Bus also supports an Intel Corp. 80486 microprocessor-based CPU card that provides a Micro Channel Architecture (MCA) bus for communications cards such as network interfaces. The low-end version of the Server 290 has a single MCA bus, while three higher end models have dual MCA buses for redundancy among communications cards, as well as additional expansion slots.

The SCSI and system memory controllers are based on RISC microprocessors. SCSI disk capacity ranges from 676M bytes to 19G bytes, the company said. System memory ranges from 8M to 32M bytes.

An Intel 80186-based management interface card communicates with Parallan's Maximum Availability and Support Subsystem (MASS) software on an IBM Personal System/2. MASS lets users monitor system utilization, including CPU, memory and network and disk utilization.

Parallan had previously developed software that enables LAN

(continued on page 60)

DEC ups speed of PC/LAN Server 3100 but not price

By Jim Brown
Senior Editor

MAYNARD, Mass. — Digital Equipment Corp. last week unveiled an enhanced PC LAN/Server 3100 that features a 45% boost in performance and carries the same price tag as the older version of the PC LAN/Server.

At Unix Expo this week, DEC is also expected to announce software that will enable Ultrix-based systems, including DEC's line of Reduced Instruction Set Computer systems, to act as local-area network servers.

DEC's new PC LAN/Server 3100e is based on the MicroVAX 3100 Model 20e, which was introduced last week to replace the MicroVAX 3100, the platform for the earlier PC LAN/Server 3100.

The 3100e features a higher speed processor and more storage than the 3100, improvements that enable PC LAN/Server 3100e to support 70 microcomputers simultaneously, 20 more than the previous model.

Like its predecessor, PC LAN/Server 3100e is Ethernet-compatible and runs existing server software called VMS Services for PCs to support LAN-attached microcomputers running DECnet Personal Computer Services Architecture (PCSA) Client for DOS.

PC LAN/Server 3100e comes standard with 8M bytes of random-access memory, expandable to 32M bytes.

The new model also comes standard with a 209M-byte disk drive, which is an increase from the 104M-byte disk drive that came with the previous model.

Acts like a VAX

In addition to acting as a LAN server, PC LAN/Server 3100e can simultaneously perform tasks typically associated with a VAX.

These include running VMS applications for directly attached DEC VT terminals or microcomputers emulating VT terminals, and supporting gateway functions that enable LAN-attached microcomputers to access a DECnet backbone or X.25 net.

The improvements were needed to help DEC combat the influx of superservers from vendors such as NetFRAME Systems, Inc., according to Howard Niden, senior manager and director of Price Waterhouse's Great Lakes VAX Consulting Practice in Chicago.

PC LAN/Server 3100e is available now with prices starting at $13,125.

The Ultrix announcement expected this week will be software called Ultrix Services for PCs. The software will run on Ultrix-based systems and fit into DEC's PCSA.

Ultrix Services for PCs will provide network services such as file and print sharing to DOS-based clients running PCSA Client for DOS- and OS/2-based clients running the PCSA Client for OS/2 software.

The initial release supports DECnet connections between the microcomputer and the server, while an enhanced version that uses the Transmission Control Protocol/Internet Protocol to link the two types of devices is expected to be released next year.

Ultrix Services for PCs is expected to be available in January. That software will be included in the price of PCSA Client software, which costs $195 for each client.

DEC last week also pledged to retrofit its VMS operating system to comply with the emerging IEEE Portable Operating System Interface and X/Open Company, Ltd.'s X/Open Portability Guide, Issue 3 specifications.

The retrofit will enable VMS to run applications developed using either guideline.

Users of X.500 directories see access control problem

Security concerns may slow X.500 acceptance.

By Bob Brown
Senior Editor

SAN FRANCISCO — Controlling access to X.500 network directories could be a major stumbling block to the acceptance of the standard, industry observers warned at the Electronic Messaging '90 conference here last week.

> "If we don't get this problem solved, X.500 will be tough to implement."
>
> ▲▲▲

X.500 directories are intended to be central repositories for all X.400-based network address information, such as electronic mail addresses. But X.500 directories may also have information such as employment histories, which would help distinguish, for example, between two employees with the same name.

Users want to include as much information as possible in their directories and make them widely accessible to enhance relations with trading partners and provide employees with fast access to useful information.

On the other hand, they do not want competitors, for example, to be able to use the directories to scan a list of engineers with five or more years of experience for the purpose of hiring them away.

"There is a definite fear among network managers that information on their companies' private directories could fall into the wrong hands within an X.500 environment," said Donald Casey, director of external affairs at Western Union Corp.

Ronald Wheeler, a technology consultant at Pacific Bell, shared Casey's concern that access control could knock X.500 progress off track.

"If we don't get this problem solved, X.500 will be tough, if not impossible, to implement," he said.

In an interview with *Network World* last week, Casey said access control was identified as an area to be defined but that it was not defined in the 1988 version of the X.500 standard. "This is an issue we have to and are starting to face," he said.

Messaging service providers

(continued on page 59)

Court decision clouds Tariff 12

continued from page 1

disrupted by the investigation. But observers disagreed on whether the FCC can let new deals go into effect or allow existing customers to change their nets.

The FCC, which must now reopen its investigation into the lawfulness of Tariff 12, issued a statement saying it is reviewing the case but did not indicate when it will act or how. Many attorneys speculated that it will take at least six months for the FCC to issue a new ruling.

John Smart, president of AT&T's Business Communications Services division, said the carrier is confident Tariff 12 will withstand additional legal scrutiny. He characterized the upcoming investigation as nothing more than a routine procedure. He said the court was unhappy with the way the FCC decided about Tariff 12, not with the decision itself.

James Blaszak, counsel for the Ad Hoc Telecommunications Users Group, which strongly supports Tariff 12, said last week that the court's ruling creates confusion and increases the risk in users' eyes of purchasing a Tariff 12. But he added that AT&T will ultimately prevail and users shouldn't be scared away from the deals.

Opponents, however, last week were sounding the death knell for Tariff 12.

"I don't think there's any way Tariff 12 can be justified, and if I were AT&T, I would be preparing a headstone with 'R.I.P. Tariff 12' on it," said John Hoffman, vice-president of external affairs at US Sprint Communications Co.

US Sprint was one of four companies that appealed the FCC's decision.

Anthony Epstein, the attorney that represented MCI Communications Corp. in the appeal, agreed that Tariff 12 will be rejected. "If the FCC applies the rules set out in the Communications Act [of 1934], they will have no choice but to conclude that Tariff 12 is illegal," he said.

But one Tariff 12 user who asked to remain anonymous said, "When we signed our original agreement, the legality was up in the air. We won't let this stop us."

Even though last week's ruling threw many aspects of AT&T's Tariff 12 into doubt, it also cleared up at least one major legal issue. Opponents had argued that it was illegal for a dominant carrier, which must offer services for all users on an equal basis, to negotiate special deals with individual customers.

But the judges in last week's ruling endorsed the concept that tariffs can arise from individual customer negotiations.

"Rates arrived at through negotiations between a carrier and a customer and then made available to other customers do not per se violate the Communications Act if the rates are filed with the FCC," the judges said.

Smart said AT&T has cleared a major hurdle with Tariff 12 since the judges ruled favorably on this practice. The judges "really affirm their belief that this is a reasonable technique AT&T is using to compete," he said.

In its reexamination, the FCC must resolve some major questions. The court said the FCC improperly considered the cost of Tariff 12 networks as a factor differentiating packaged net deals from individually tariffed component services. The FCC will have to decide if there are factors other than cost that distinguish net packages from individual services.

If the FCC concludes that packaged deals are not materially different, discounted prices would be considered discriminatory.

The FCC must also reexamine price differences between Tariff 12 packages. The agency ruled that Tariff 12 packages are similar but downplayed price differences from one package to another as the result of different service mixes.

Opponents had complained that there were wide price differences for the same services under different Tariff 12 deals. There are examples where prices for the same service varied by as much as 100%. The court said it found no evidence that the FCC had conducted a thorough enough investigation into this question to issue a decision.

"The FCC's terse comment, whatever it was intended to mean, gives us no confidence that this analysis has yet been done," the judges said. "And the FCC must do this before it may declare the tariffs lawful."

The judges said it may be necessary as part of this investigation for the FCC to examine the user contracts that accompany Tariff 12 deals. Users have strenuously opposed filing contracts with the FCC, saying that the documents contain sensitive business information.

However, an FCC attorney who asked not to be named said it is unlikely the contracts will be solicited for the investigation.

AT&T to offer frame relay interface for its Datakit II

By Bob Wallace
Senior Editor

BASKING RIDGE, N.J. — An AT&T official last week said the company is developing a frame relay interface for its Datakit II Virtual Circuit Switch (VCS) for use in private packet networks.

The interface, a plug-in board that can be housed in a Datakit II VCS cabinet, constitutes AT&T's first announcement of support for frame relay technology.

The frame relay interface will help companies better support such bandwidth-hungry applications as interconnection of geographically dispersed local-area networks, bulk file transfers and videoconferencing.

In an interview with *Network World,* David Mieszcanski, packet and transmission services product manager for AT&T's Business Communications Services unit, said the interface under development will be generally available to users in the third quarter of 1991.

"We've decided to equip the Datakit II VCS platform with a frame relay interface for private networks and are evaluating other frame relay opportunities," Mieszcanski said.

Announced in December 1988, Datakit II VCS is a virtual circuit switch with an 8M bit/sec backplane bus that can switch 44K packet/sec and can support as many as 3,500 simultaneous virtual circuits, according to Brian Dunlap, a market manager with AT&T Network Systems Group's data networking group.

Large corporations, state and local governments and universities use Datakit II as the switching hub for wide-area data networks. Local exchange carriers also use Datakit II VCS in order to provide central office local-area network services.

"The interface could help AT&T boost Datakit sales," said Nick Lippis, a principal with Northeast Consulting Resources, Inc., a Boston consultancy. "The local exchange carriers could use the interface to support public frame relay services, but that's rather unlikely because they haven't had much success selling simpler central office-based data services."

AT&T expects to formally announce the frame relay interface plans at the Communication Network '91 conference and exposition in Washington, D.C. in January, according to Mieszcanski.

AT&T will pitch the interface to its 12 Custom Network Offering II (CNO II) customers. With CNO II, AT&T provides one-stop shopping for users that want AT&T to design, install and maintain turnkey networks.

In addition, AT&T will sell the interface to current Datakit II users and prospective Datakit users including companies with AT&T Network Systems Group Information System Network.

Mieszcanski estimated that there is an installed base of more than 1,000 Datakit II VCS nodes.

OSF unwraps OSF/1

continued from page 2

A nonprofit firm formed by seven vendors in 1988, OSF is now striving to provide software tools that enable developers to build links between applications running under OSF/1 and other vendors' operating systems.

"That's what OSF is all about," said Judith Hurwitz, editor of "Unix in the Office," a newsletter published by the Patricia Seybold Office Computing Group in Boston. "If you want to have true distributed computing, [OSF/1 and DCE] give you that ability."

Others agreed. "OSF architected the operating system with distributed computing in mind," said Nina Lytton, editor and publisher of the Boston-based "Open System Advisor" newsletter.

The key API supported by OSF/1 is X/Open Company, Ltd.'s X/Open Transport Interface, which will enable developers to build OSF/1-based applications that can communicate across TCP/IP nets or nets using such transport protocols as Digital Equipment Corp.'s DECnet.

OSF officials promised to add Open Systems Interconnection protocols to a future version of the operating system and said OSF intends to release new versions every 12 to 18 months.

OSF/1 was also designed to comply with IEEE Portable Operating System Interface guidelines, as well as the third issue of the X/Open Portability Guide. This enables OSF/1 to run applications developed using the common set of programming commands and syntax defined under those guidelines.

OSF/1 also includes a Sun Microsystems, Inc. Network File System-compatible feature developed at the University of Guelph near Toronto.

OSF engineers said OSF/1 can take advantage of symmetrical multiprocessing hardware. This speeds the movement of data from the network to internal memory by enabling each processor to simultaneously process incoming network packets rather than processing them individually.

Although analysts praised OSF/1's integral support for DCE, they said the inclusion of popular Unix networking features into OSF/1 does not give it an edge over other Unix-based operating systems.

"I do not believe for a minute that OSF/1 has a strategic advantage from a networking point of view over AT&T's Unix System V.4," said Rikki Kirzner, senior industry analyst for Dataquest, Inc.'s Unix service based in San Jose, Calif. AT&T's Unix System V.4 already includes many of the tools built into OSF/1 and can be quickly modified for those it does not support, she said.

In other news last week, OSF said it has created a new seat on its board of directors that will be filled by an end user. The firm also announced that demand for DCE is forcing it to make a prerelease version of its DCE developer's tool kit available to non-OSF members, a break in tradition for OSF.

Also, OSF said it received 40 responses to its Distributed Management Environment Request for Technologies. OSF is seeking technologies that can be used to build a system for managing distributed networks and the systems attached to them.

Unit develops wireless LAN

continued from page 3

build an 18-GHz radio would have resulted in a $25,000 device the size of a washing machine, the company said.

Motorola selected the 18-GHz radio frequency because it can support traditional LAN speeds. Other wireless LAN vendors such as NCR Corp. use spread-spectrum technology ("NCR set to demo wireless local network at NetWorld," *NW,* Sept. 3).

Spread spectrum uses a smaller available range of frequencies to transmit data, which translates into a lower achievable data rate. Spread-spectrum transmissions are also difficult to confine to a specific area, Motorola said.

Implementation

Although details were sketchy, Motorola said the WIN technology will be implemented in stand-alone radios that broadcast data among nodes in a "microcell." Microcells are areas of a building in which network nodes transmit data at a set frequency. The company recommends that microcells using the same frequency in the 18-GHz range be located at least 120 feet apart.

Motorola will license specific channels within the 18-GHz frequency from the Federal Communications Commission.

Motorola said WIN provides data security through the use of low-power 18-GHz signals, which lose strength if they pass through walls or doors. This means that one WIN system is essentially invisible to another system that is more than 120 feet away.

LANs based on the technology are likely to be used by companies that frequently relocate users and thereby incur the expense — estimated by Motorola to be as high as $1,000 per LAN node — of labor and materials for rewiring.

"This technology is very good for work groups that move frequently or are in a building that is too old to have cable installed," said Greg Cline, program manager for the communications technology service at Information Strategies Group/IDC Washington in Vienna, Va. "But wireless networking remains a niche technology."

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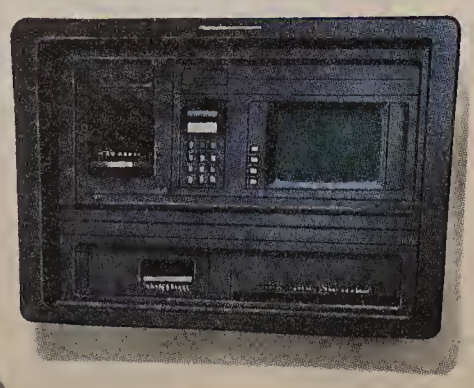

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Worth Noting

Network Equipment Technologies, Inc.'s (NET) market value has plunged from $500 million earlier this year to roughly $89 million today, according to Rosemary Cochran, a principal at Vertical Systems Group in Dedham, Mass. Meanwhile, NET's chunk of the worldwide T-1 multiplexer market is projected to drop from 22% in 1989 to 14% this year.

People & Positions

McDATA Corp. last week named **John McDonnell** chairman and chief executive officer. McDonnell replaces **Donald Dreibelbis,** former CEO and president, who left the company to resume a full-time career in a venture capital business.

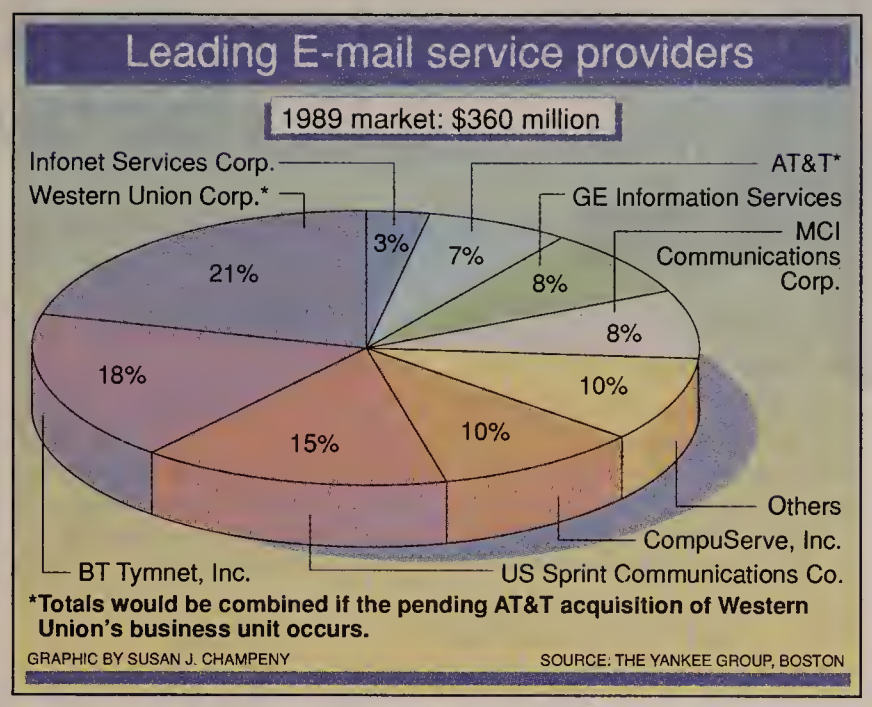
The company also promoted **Timothy Hoogheem** to the posts of president and chief operating officer. Hoogheem had served as chief financial officer and vice-president of finance.

McDonnell will form the company's long-term business strategy, while Hoogheem will oversee the company's daily marketing, sales, engineering and manufacturing operations.

Stephen Layne, founder and former cochairman of the X.400 Application Program Interface Association, last week was named vice-president of business development at **Soft-Switch, Inc.**

In his new position, Layne will coordinate the formation of worldwide strategic business relationships for the firm.

Soft-Switch is a Wayne, Pa., maker of software and hardware used to link electronic messaging systems.



N.E. Tel rate restructuring could fare well for users

Interstate long-distance rates may take a dive.

By Ellen Messmer
Washington Correspondent

BOSTON — A bold regulatory experiment by the Massachusetts Department of Public Utilities (DPU) to restructure New England Telephone and Telegraph Co. rates could eventually have a dramatic effect on other local exchange carriers.

Earlier this month, New England Telephone cut local access charges by 40% and business class rates by 10%, based on rate revisions the DPU ordered last June. The purpose of the rate changes, the DPU said, was to structure New England Telephone's rates to reflect the actual cost of providing a service, eliminating a policy of cross-subsidization of some services.

A five-year study commissioned by the DPU and completed last June found that New England Telephone had subsidized the cost of residential rates by charging businesses a premium for service.

Offsetting the reductions, New England Telephone was allowed to increase residential basic service by $3 per month and basic business service by $6 per month. In addition, the carrier was allowed to raise analog private-line rates by nearly 30%. Digital private-line rates remain unchanged.

As a result of these changes, most notably the 40% drop in local access charges to interexchange carriers and bypass service providers, intrastate long-distance rates are headed downhill. For instance, the DPU quickly approved an AT&T request to slash rates to reflect an $18.1 million reduction per year in access charges. An inter-local access and transport area, intrastate call that previously cost $1.90 now costs $1.15, the DPU stated.

Bill Ericson, director of legal and regulatory affairs at MCI Communications Corp.'s Northeast division, said MCI would respond to price competition and lower its rates as well.

Observers said the Massachusetts rate investigation is the first comprehensive look into local exchange carrier pricing since divestiture. Connecticut regulators have begun similar actions to align rates with costs, and other regulatory agencies are certain to be watching the Massachusetts experiment closely.

A New England Telephone spokesman said the DPU issued a balanced order. He pointed out that rates in the past did not always correspond directly with costs because New England Telephone has been required to provide service to all customers in its region regardless of location, a practice the industry refers to as universal service. He emphasized that the company could meet the goal of universal service under the new structure.

Susan Baldwin, director of the DPU's telecommunications division, said six rate-structure goals guided the rate review: cost, economic efficiency, simplicity, earnings stability, continuity and universal service.

As part of an experiment designed to provide a smooth transition, the DPU ordered severe rate decreases in the less populated western portion of the state and moderate decreases in the eastern portion, which includes Boston.

The first review of the new regulatory scheme is scheduled for January.

Soft-Switch expands business horizons

Company reveals strategic business ventures, including development deal with Data General.

By Bob Brown
Senior Editor

SAN FRANCISCO — Soft-Switch, Inc. last week announced a series of strategic business agreements, including a development relationship with Data General Corp. to build a Unix version of the Soft-Switch Central electronic messaging system interconnection product.

Soft-Switch also introduced a program under which it will license its application program interface (API) to system vendors and software developers to help them integrate their applications with electronic messaging systems.

In addition, the company announced the acquisition of a facsimile and telex gateway manufacturer in the U.K., as well as the creation of direct sales and support operations in several European countries.

The agreement with DG is focused on initially developing a version of Soft-Switch Central to run on Unix-based AViiON computers. Soft-Switch would later aspire to offer Soft-Switch Central on other vendors' Unix platforms, said Soft-Switch President Michael Zisman in an interview last week at the Electronic Messaging '90 conference here.

"This agreement should broaden our customer base," Zisman said. Currently, Soft-Switch Central runs only on IBM MVS and VM operating systems, he said. Soft-Switch said it is hoping to position the Unix version of its software in corporate networks where Unix systems control distributed networks at remote sites and communicate with IBM mainframes at a central facility.

David Atlas, a senior analyst at International Data Corp. in Framingham, Mass., said a Unix version of Soft-Switch Central should enable Soft-Switch to garner business from a number of small users.

Soft-Switch plans to ship a Unix version of Soft-Switch Central for DG's AViiON line by the

(continued on page 29)

INDUSTRY BRIEFS

MCI, Comdisco to offer disaster services. MCI Communications Corp. and Comdisco Disaster Recovery Services, Inc. (CDRS) last week teamed up to provide data communications and disaster recovery services to end users. Under a new marketing alliance, the two companies will provide users with emergency services — such as designing emergency rerouting of customer traffic — in the event of a network disaster or major power outage.

In addition, MCI will design and implement a data network to support the company's CDRS Net backbone network, which is used for backup and recovery services. The MCI network will consist of T-3, T-1 and digital private-line services.

Although available initially in the U.S. only, the two companies are exploring the possibility of providing the service worldwide.

MIPS inks GOSIP pact with Touch. MIPS Computer Systems, Inc. last week announced an agreement whereby Touch Communications, Inc. will supply MIPS with Government Open Systems Interconnection Profile (GOSIP)-compliant products to be used with its Unix-based RISC/os computer systems.

Touch will supply MIPS with File Transfer, Access and Management (FTAM), the X.400 Message Handling System and the underlying wide- and local-area network protocols that conform to GOSIP. The resulting product, scheduled for release in early 1991, will be marketed by both companies.

PacBell forms datacom group. Pacific Bell recently announced the formation of its Data Communications Group, which will serve as a systems integrator responsible for marketing data communications services. The Data Communica-

(continued on page 29)

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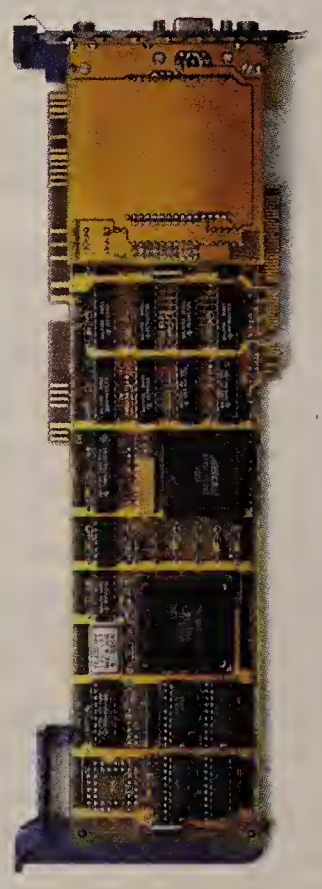

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See The FAXNeT Form on Page 20

Worth Noting

According to AT&T Network Systems Group, about 1% of the 40 million Centrex lines supported by its 5ESS central office switches are Integrated Services Digital Network Basic Rate Interface circuits.

Carrier Watch

GTE Telephone Operations of Irving, Texas, recently announced CentraNet Voice Messaging, a voice-messaging service for its Centrex customers in Florida, Illinois and Hawaii.

CentraNet is a central office-based service that enables users to create, send, receive and store voice messages around the clock.

GTE plans to roll out the service in California and Texas and said it will roll out the service in additional states by year end.

The service costs $10.95 per month per mailbox for up to 50 mailboxes. The price per mailbox for users with more than 50 mailboxes depends on the size of the Centrex and the length of the voice mail contract, a company spokeswoman said.

Alltel Corp., an independent telephone company located in Hudson, Ohio, recently completed the installation of a digital wide-area data network based on Northern Telecom, Inc.'s DPN-100 line of packet switches.

The DPN-100 network serves as the backbone for Alltel's corporate information systems and will enable 2,000 Alltel end users to access billing, accounts payable and customer service data bases, as well as electronic mail and other applications running on multiple host computers.

The network consists of DPN-100/20 hub switches in Little Rock, Ark., Matthews, N. C., Kittanning, Pa., and Twinsburg, Ohio, and 114 DPN-100 access data switches at 74 additional locations.

AT&T to streamline SDN billing and provisioning

New billing architecture will support new products.

By Daniel Briere
Contributing Editor

AT&T is poised to launch sweeping changes to its Software-Defined Network (SDN) service that will cut installation time by as much as 60 days and bill mailing periods by as many as four days.

ANALYSIS

The opening next month of a new Billing Support Center (BSC) and implementation of new provisioning procedures will enable hundreds of SDN customers to add SDN locations faster and receive more up-to-the-minute bill details.

While AT&T admits that its SDN bills have been arriving late, customers charge that many of the bills have also been inaccurate.

AT&T said it hopes the new billing system — which should be in full use by the third quarter of next year — and other procedural changes will eliminate these errors. The company added that it plans to build new products on this foundation throughout 1991, including cross-service consolidated billing reports for all of AT&T's switched services.

The SDN order-entry process starts the provisioning process and drives SDN billing. AT&T field personnel enter customer data into the network to activate switched access locations. That data is also used for location mapping in the billing system.

SDN provisioning has been severely criticized lately, particularly by service aggregators seeking to add customers to their SDN-based aggregation programs. There has been so much demand for provisioning that AT&T has limited the number of switched access location changes for any single SDN to just 400 per month.

Beginning in November, however, AT&T will switch to a new process that will reduce the provisioning interval for switched access locations from its current 60 to 90 days to just 30 days.

One of the changes AT&T

(continued on page 12)

Briere is president of TeleChoice, Inc., a Montclair, N.J., telecommunications consultancy specializing in long-distance service analysis and network design.

WASHINGTON UPDATE

BY ANITA TAFF

Ameritech files to test PCN. Ameritech last week filed a request with the Federal Communications Commission for an experimental license to test personal communications network (PCN) technologies in the Chicago area. If the request is granted, Ameritech will deploy about 1,000 portable handsets and 100 cell sites. PCN technologies vary somewhat but generally consist of transceivers that support communications with small handsets.

The systems typically use lower power transmissions and cover much smaller areas than do traditional cellular systems. For its test, Ameritech said it will use radio cells capable of serving an area 200 yards in diameter.

Ameritech plans to use frequencies in the 1.85- to 1.99-GHz range, which is currently used by private microwave networks. One of the primary goals of the trial is to determine whether there would be any interference problems with existing microwave systems.

Ameritech has not yet announced what equipment supplier it will use in the test but said it would definitely be a domestic company.

Several other companies have asked the FCC for permission to conduct PCN trials in major cities including Washington, D.C., Houston and Los Angeles. If these trials are successful, it is likely that the FCC will begin to consider requests for permanent licenses. This could be a problem since unused radio spectrum space is scarce and current users strenuously oppose giving up any portion of their frequencies for new technologies.

AT&T's price cap performance

Changes in the price index during the first year of price caps

Services	Pricing limits			Percentage change since June 30, 1989
	Lower limit	Current rating	Upper limit	
800 services				
AT&T 800	88.8	94.7	98.3	-3.8%
Megacom 800	80.0	85.3	88.5	-7.6%
Readyline 800	84.8	90.2	93.9	-6.5%
Business services				
AT&T WATS	89.8	94.7	99.2	-0.1%
Megacom	84.0	88.6	92.9	-4.5%
SDN	73.0	76.8	80.7	-6.2%
Voice Grade Private	93.2	98.1	103.0	-3.1%
Other private	72.2	76.1	79.8	-23.2%

Index numbers for July 1, 1990, represent prices relative to service rates on June 30, 1989, when they were assigned a value of 100. Price caps allow AT&T to raise or lower prices on individual services by as much as 5% annually, but collectively, those adjustments cannot exceed a maximum limit for a given category.

SOURCE: FEDERAL COMMUNICATIONS COMMISSION, WASHINGTON, D.C.
GRAPHIC BY SUSAN J. CHAMPENY

Users question FCC praise of price caps

Agency report commending price cap plan omits valuable comparison with rate-of-return regulation.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — Although the FCC is exalting the first year of price cap regulation of AT&T, user groups and trade associations say they are unconvinced and question whether the industry is really better off.

The Federal Communications Commission's report, released earlier this month, concluded that "there are no obvious defects either in the price cap plan itself or in AT&T's performance under the plan."

The report points to successes in a number of areas, including $727 million in rate reductions, maintenance of network quality and absence of overearning or increased market dominance.

However, the report does not compare the results of price cap regulation with projections of what would have resulted under rate-of-return regulation. This omission led several users and trade groups to question the thoroughness of the report and prompted complaints that the report was designed more to promote the FCC's policies than to seriously study the performance of price caps.

In addition to the lack of a comparison with rate of return, critics also questioned the way data was presented and why recent figures weren't included in the report.

"The report may have proved that the world didn't come to an end under price caps, but that's about all it proves," said one telecommunications attorney involved in the proceeding who requested anonymity.

The FCC report was issued in response to concerns from Congress that the agency is moving too quickly with new regulatory plans. Rep. Edward Markey (D-Mass.), chairman of the House Subcommittee on Telecommunications and Finance, asked for an update on AT&T's experience with price caps before the agency proceeded with price caps for the local exchange carriers.

> "It may prove the world didn't come to an end under price caps, but that's about all."
>
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Critics have repeatedly expressed fears that price cap regulation, which limits rates rather than profit levels, gives carriers too much pricing flexibility. They also worry that carriers will be tempted to cut back on network upgrades and maintenance in order to cut costs and increase profits under price caps.

The FCC's report, however,

(continued on page 12)

Users question price cap praise

continued from page 11

said there is no evidence that any of these negative consequences is occurring.

For example, the report stated that rates have fallen almost equally among AT&T's services during the first year. Prices for AT&T residential services fell 4.4%, rates for 800 services fell 4.6% and rates for all other services fell 4%.

The FCC was unable to say what rate decreases might have occurred without price caps. Mary Brown, head of the FCC's price cap task force, said there is no way the agency could calculate what AT&T's costs — and, therefore, its rates — would have been under rate-of-return regulation.

"If you walk down the path of incentive regulation, you cannot by definition know what would have happened if you had walked down another path. That's the fundamental problem," she said.

Although the FCC will conduct a comprehensive review of AT&T's performance under price caps in the fourth year of the plan, even that evaluation will not contain a comparison to rate of return. Instead, the FCC will evaluate price caps to determine if rates are coming down as expected and if there are complaints about a deterioration of service quality, Brown said. If problems are found, adjustments will be made, she said, but there is no chance the agency will reinstate rate-of-return regulation.

"Price caps has been adopted for AT&T, as it has for the local exchange carriers, on a permanent basis," Brown said. "We're going to be looking for ways to adjust it and make it better, but the performance review is not intended to ask whether we should go back to rate-of-return regulation."

Users, however, were not satisfied with that explanation and complained that it is virtually impossible to assess whether they are better off under price caps without a comparative analysis.

"We are disappointed that there was not a comparison to results that would have been expected under rate-of-return regulation," said Herbert Marks, counsel for the Independent Data Communications Manufacturers Association, Inc., an equipment maker trade group.

Marks also questioned why the report doesn't take into account several recent developments such as a September filing by AT&T raising all private-line rates and a slight increase in AT&T's market share during the second quarter of this year.

Jeff Linder, counsel for the Tele-Communications Association, Inc. (TCA), which generally supports price caps for AT&T, said the report did not eliminate all concerns.

One aspect of price caps that TCA did protest was the inclusion of private-line services into a pricing basket, or category, with several other services. TCA said AT&T could take advantage of its dominance in the private-line market and manipulate prices.

Figures in the FCC report indicate that prices for the private-line services are near the maximum levels allowable under price caps. Linder questioned whether users might have fared as well or better under rate-of-return regulation for these and other services.

Approximately half of the drop in rates can be attributed to decreased local access charges. During the past few months, prominent user groups such as the International Communications Association have questioned whether they are benefiting from the effects of access charge reductions as fully as they did under rate-of-return regulation.

> "We are disappointed that there was not a comparison to results that would have been expected under rate-of-return regulation," said Herbert Marks, counsel for the IDCMA.
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In its report, the FCC insisted that customers have gotten the full effect of access charge reductions. In the past, AT&T was required to file new rates to reflect the lower access costs, but in figuring its new rates, AT&T was allowed to take into account other costs that might have increased, the FCC said. The result, according to the report, was that "when other cost increases could be demonstrated, access charge decreases did not result in a dollar-for-dollar decrease to AT&T's rates under rate of return."

Another criticism of the FCC report concerned AT&T's market dominance. The FCC said there is no evidence that AT&T has become more dominant in the market during price caps, a conclusion based in part on its figures that show declining market share for AT&T.

AT&T streamlines SDN

continued from page 11

plans to make is in personnel. It wants to take the network implementation tasks from the sales groups and reassign it to special implementation personnel for oversight and coordination, AT&T said. Network service managers are being retrained as project coordinators whose job will be to support six new regional provisioning data centers (PDC) being formed countrywide.

The PDC technical sales engineers will be responsible for obtaining data such as the type of customer premises equipment and local exchange carrier information.

A second major change would involve automating parts of the provisioning process. Project coordinators in the field will use terminals to transmit customer location data to PDCs, where the data will be logged and then passed to the appropriate Bell operating company.

The BOCs would use the data to streamline provisioning of SDN access and then transmit installation dates and a list of such things as trunks back to the AT&T PDCs. PDC staff use this information to schedule SDN cutover to coincide with access cutover and then pass final dates on to users.

AT&T said it hopes to be able to install switched access sites 10 days after receiving an order and dedicated access locations within 20 days. In all, AT&T plans to be able to install a new SDN network in less than 30 days. Current SDN customers will be able to add new switched access locations in less than one business week.

AT&T has cautioned that the new process is still subject to capacity constraints: While these cutover periods are possible on a per-item basis, a large network or surge in requests could stretch the provisioning cycle. AT&T said it hopes to extend or drop the present 400-location limitation in the second quarter of next year.

Billing changes

AT&T is also preparing significant changes in its billing architecture to overcome billing problems it has had for more than a year. The SDN billing system is used daily to process customer usage data. As more customers were added, the daily batch runs became longer.

By the end of 1989, daily runs were taking longer than 24 hours to process, causing bills to be delayed. The problem became a catastrophe when SDNs from a fall 1989 SDN promotion came online, many of which were for aggregators.

In late April 1990, AT&T expanded the capacity of its system to triple the load so that daily processing of messages could be handled in about eight hours.

But the transition to the new SDN billing architecture has not been without problems: It has affected bill delivery and accuracy. According to SDN product managers, the first clean set of SDN bills was issued to users in September.

The April fix was only temporary until a new billing architecture could be implemented in mid-1991. AT&T will be moving from a serial form of bill processing to a more parallel form in which independent tasks are performed side by side.

AT&T product managers traced bill mailing problems to two time-consuming tasks: usage and access rating. Under the current architecture, usage is rated first and access is added in, even though the access components are billed in advance and known at the end of the usage period.

> AT&T said it hopes to install switched access sites 10 days after receiving an order and dedicated access locations within 20 days. In all, it plans to be able to install a new SDN in less than 30 days.
>
> ▲▲▲

AT&T will adopt a parallel-structured process in which usage and access data is collected and rated separately, in parallel, and then added together. This will cut approximately two days off the billing cycle.

AT&T is also moving its processing center from the Dulles, Va., center to Mesa, Ariz., which is the collection point location for all switches in the AT&T network. The theory is that by eliminating one long data link, AT&T can get the information into the billing system quicker, allowing faster overall processing.

The new architecture will serve AT&T in a multitude of ways. Mainly, the architecture will enable AT&T personnel as well as users to view on-line bills as many as four months in arrears. It will also allow the carrier to reduce the bill mailing process to just four days from the current corporate commitment of six days.

The new billing architecture has necessitated some internal organizational changes. For this reason, AT&T has created the BSC, an internal one-stop shop for billing inquiries and functions that is due to open in November.

The BSC follows the now-standard AT&T philosophy on technical support centers: It will be staffed with experts and supported by SDN product management. It joins the other SDN support center in the same location, which fields questions about SDN functions.

Account Information Centers sprinkled around the country will draw heavily on the BSC's resources. Thus, AT&T will provide them with an on-line informational link. The BSC is the interface between the outside sales force and product management for custom billing requests.

AT&T has already started offering a number of custom billing options, including five discount billing schemes in conjunction with its Multi-Location Billing option.

These options allow a customer to:

- Allocate all discounts under the program to the main account.
- Assign discounts to each location according to its prorated share of traffic.
- Assign a portion of the discounts to each location according to its prorated share of traffic, with a set percentage being retained for the headquarters location.
- Bill usage and access rates per location or bill subsidiaries separately from main accounts.

AT&T is developing a new cross-service consolidated billing option. Initially, the service will be limited largely to switched services. Starting in the first quarter of next year, AT&T will offer consolidated billing on Megacom 800 and SDN, to be followed later in the year with Megacom, switched digital services and services covered by the Multi-Location Calling Plan.

Tariff 12 affected

AT&T's changes to the SDN process will impact the provisioning intervals of the Virtual Telecommunications Network Services (VTNS) customers as well. The underlying mechanization schemes being installed at the local exchange carriers involve comprehensive research and administrative functions that affect the provisioning of all switched access connections with AT&T.

The impact on Tariff 12 billing is less clear. AT&T manages billing on a product-line basis, and SDN has its own billing architecture that is distinct from other product lines such as VTNS. The Tariff 12 billing systems have been under fire recently as more customers have gone public with major billing problems concerning accuracy and timeliness.

DATA COMMUNICATIONS

PRODUCTS, SERVICES, ARCHITECTURES, STANDARDS AND NETWORK MANAGEMENT

Worth Noting

"SNMP was developed as a protocol to do network management today, not one that would take a lot of time going through standards committees."

Frank Henderson
Director of network technology
General Logistics International, Inc.
Speaking at the recent INTEROP 90 Conference and Exposition in San Jose, Calif.

Data Packets

MCI Communications Corp. and **Comdisco Disaster Recovery Services, Inc.** last week agreed to jointly market data communications and backup data processing services. Under the agreement, MCI and Comdisco will work together to design and install custom networks that use MCI T-1, T-3 and slower speed digital leased-line services to enable customers to reroute data to a Comdisco disaster recovery center.

US Sprint Communications Co. last week added a news clipping service and support for Apple Computer, Inc. Macintoshes to its SprintMail electronic mail service.

The news service enables subscribers to create a profile of news items that interest them. SprintMail then searches 15 news services daily, storing items that fit the profile in the user's SprintMail mailbox for retrieval. There is no charge for the service.

The firm also introduced Mac SprintMail software for Macintoshes that lets users include ASCII text and binary graphics files in their E-mail. Messages are then uploaded to SprintMail for delivery to other subscribers or via facsimile, Telex or hard copy to non-SprintMail subscribers.

The software is expected to be available in January. Pricing has not been set.

NetView pricing: feast or famine?

Number of licenses	Mainframe	System type	Unit price Version 1	Unit price Version 2	Volume price Version 1	Volume price Version 2
Example 1: MVS/XA						
1	3090 30E	Central	$1,580	$3,205	$1,580	$3,205
4	4381 91E	Distributed	$1,435	$552	$4,305	$1,656
					Total: **$5,885**	**$4,861**
					Percentage change from Version 1 to Version 2: **-17.4%**	
Example 2: MVS/ESA						
2	3090 18J	Central	$1,585	$2,925	$3,170	$5,850
6	3090 18J	Distributed	$1,585	$1,680	$7,133	$7,560
					Total: **$10,303**	**$13,410**
					Percentage change: **30.2%**	
Example 3: MVS/XA						
1	3090 60J	Central	$1,905	$5,760	$1,905	$5,760
3	3090 15J	Distributed	$1,580	$1,395	$3,555	$3,139
3	4381 91E	Distributed	$1,435	$552	$3,229	$1,242
					Total: **$8,689**	**$10,141**
					Percentage change: **16.7%**	

Recent changes to NetView's pricing saves money under some configurations but can mean dramatically higher prices under others, especially for users that run multiple copies of the more expensive centralized NetView software.

GRAPHIC BY SUSAN J. CHAMPENY — SOURCE: IBM, WHITE PLAINS, N.Y.

NetView price changes may be wolf in sheep's clothing

IBM's pricing overhaul could cost users more.

By Paul Desmond
Senior Editor

IBM's recent restructuring of NetView pricing, which was intended to let users run less expensive subsets of the software on some mainframes, may in fact cost some users more money.

Previously, users with multiple mainframes in a network had the choice of running NetView on each mainframe, configuring the net so that all alarms flowed to a central mainframe running NetView or using some combination of each alternative.

NetView Version 2's new pricing structure, announced in early September, was supposed to make such a distributed configuration less expensive but, in practice, may do just the opposite, especially for users of large mainframes (see graphic).

The pricing also has some users confused as to which of the three NetView options to buy. One of the choices is a central system option, which includes full-function operator console software and a NetView-to-NetView communications facility used to let one mainframe manage a multidomain net. The second is a distributed system option for mainframes that feed management data to a central system NetView, and the third is a standalone option for users with a single mainframe controlling a network and no need for NetView-to-NetView communications.

"It looks like the NetView [Version 2] pricing will cost us about 65% more per year," said Jim Oleksiw, telecommunications director at The Travelers Corp. here. "I feel IBM really socked it to us."

The Travelers currently runs 10 copies of NetView on its IBM 3090 and 3084 mainframes, which range in size from IBM Model Groups 35 to 60, Oleksiw said. The 65% price hike is based on the purchase of only one central system NetView, which is the most expensive piece, along with nine distributed system options.

But Oleksiw said he isn't convinced that'll be the case. Today, the company uses up to five mainframes to initiate sessions, although three of those handle 90% of the load.

Therefore, he said, it's possible The Travelers would have to use the central system option for three mainframes, which would increase its annual costs by up to 110% over NetView Version 1. The company is still working with IBM to determine which option it needs.

Although NetView Version 2 includes some long-awaited enhancements such as support for LU 6.2 and an OS/2-based graphical interface, Oleksiw said, "I'm not getting enough to make me want to pay for it."

Analysts said the pricing structure will indeed require users to take a hard look at what they're getting for their money, and that won't be easy.

"How do you judge what is a fair price for integrated network management?" asked Atul Kapoor, vice-president of the consultancy Kaptronix, Inc. in Ha-

(continued on page 17)

Navy tests new data exchange standard

Emerging PDES standard promises to help Navy route product designs between different systems.

By Ellen Messmer
Washington Correspondent

CHARLESTON, S.C. — At a Navy manufacturing test facility here, network personnel are using an emerging data exchange standard to route product design data among dissimilar computers stationed on design and production networks.

Should PDES — which stands for Product Data Exchange using the Standard for the Exchange of Product Model Data (STEP) — pass a series of tests, it could speed up delivery of parts to the military, cut down on suppliers' production costs and eliminate a mountain of paperwork.

PDES is viewed by many in the government sector as the cornerstone of the Defense Department's Computer-Aided Acquisition and Logistics Support (CALS) initiative, which requires that by 1992, data and graphics relating to weapons systems be delivered in digital rather than paper format.

Using PDES, military personnel will be able to scrap the time-consuming process of writing orders for parts and will instead be able to transmit digital files to suppliers.

PDES is the U.S. version of STEP, an emerging International Standards Organization graphical standard. It supports the exchange of product design data, including graphics and product tolerances, among dissimilar computers used in computer-aided design and manufacturing and in factory-floor equipment.

Testing procedure

In its current experiment, the Navy is testing PDES within three manufacturing work cells. Orders are sent, along with PDES design files, from a Navy location in Philadelphia to the manufacturing center here. The orders are sent in an electronic data interchange format over the GE Information Services value-added network.

At the manufacturing center, they are stored on an Oracle Corp. data base management system on a Digital Equipment Corp. VAX minicomputer. The DEC VAX resides on the plant's DECnet, which supports Transmission

(continued on page 17)

Device pares down need for host ISDN adapters

By Jim Brown
Senior Editor

SAN FRANCISCO — Ascend Communications, Inc. this week is expected to introduce a device that will halve the number of ISDN terminal adapters that host computers need to communicate with remote workstations.

The product, called Pipeline, resides in a user's data center and acts as a switch that passes data from multiple incoming Integrated Services Digital Network circuits to appropriate host ports. This eliminates the need to install a host ISDN adapter to support each remote workstation.

Pipeline includes a chassis with four or 17 slots, as well as network interface boards supporting four, eight or 16 Basic Rate Interface (BRI) circuits and host interface boards with 16 or 32 RS-232 ports. Ascend said it will release a board supporting the ISDN Primary Rate Interface next year.

The product works with ISDN services supported by AT&T's 5ESS and Northern Telecom, Inc.'s DMS-100 central office switch.

The Pipeline BRI interfaces take data off incoming 64K bit/sec B channels and switches the channels over an internal 128M bit/sec bus to host interface boards, which then pass the data to local computers at speeds up to 19.2K bit/sec.

The host interface boards support packet or circuit switching. For instance, one interface board includes an integral packet assembler/disassembler capable of processing as many as 200 packet/sec.

The interface forwards data from a maximum of four B channels to the proper host. Each B channel can support as many as 32 virtual circuits.

The other interface board routes data from as many as 16 BRI circuits, each supporting two B channels, to 32 host ports at up

(continued on page 17)

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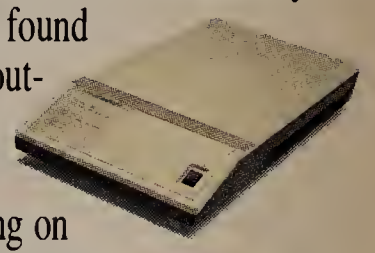
NEC modems keep information moving as if your life depends on it.

In a 911 emergency, to risk a communications breakdown is to risk a life. So if you don't want to take any chances, make sure your modem can handle the pressure in a crisis.

In Florida, NEC's I Series Intelligent Chassis System is now helping coordinate the life-saving efforts of Lake County's 911 services. The county chose the system after tests found NEC's I-Chassis modems outperformed others. And they've proved their round-the-clock reliability by being on the job there for more than a year without a single failure.



Since NEC modems are designed to rapidly and accurately transmit huge volumes of data, Lake County's 911 operators can now quickly pinpoint accident locations, provide traffic instructions, find patient medical records, and dispatch back-ups when needed. And because NEC's Dual Modem Card links 911's control center to NEC Dial-up Modems in remote locations, Lake County feels it has found the best data networking solution attainable.

Each individual I Series Chassis supports a wide variety of applications and products. These include synchronous and asynchronous operation in dial-up or leased line networks. Line speeds ranging from 300 bits/s to 56k bits/s with both analog and digital capabilities. As well as compatibility with CCITT standards such as V.32 and V.42/bis. Plus, the system's built-in flexibility eliminates product obsolescence by making it easy to add, mix, and match other chassis and data communications devices as network requirements change.

No matter what business you're in, you need a modem that can keep facts and information on the move without causing a crisis of confidence. So choose wisely. Choose NEC's I Series Intelligent Chassis System and Network Manager. For a free assessment of all your data networking needs, **call (800) 222-4NEC.**

NEC

See The FAXNeT Form on Page 20

Navy tests new data exchange standard

continued from page 13

Control Protocol/Internet Protocol and can communicate with attached design and factory-floor subnetworks.

Once an order is stored in the DBMS, inventory ordering and production scheduling applications position the job in the factory's production schedule and order the materials to build it. PDES files are split off from the order and shipped across the network to CAD/CAM data bases.

In a design network attached to the DECnet, workstations running Computervision Corp. CAD/CAM software extract from the data bases PDES design files, complete with data describing the temperature, pressure and other physical tolerances of the design.

Engineers use an artificial intelligence tool called ICAD to develop a process plan for manufacturing the product. Once complete, engineers ship that file over the subnet back over the backbone DECnet and to IBM 80286-based personal computers attached to an Ethernet on the plant floor.

Those personal computers act as equipment controllers for attached machine tools, robots and other manufacturing equipment.

The personal computers then instruct work cell equipment to machine parts based on PDES design tolerances and preprogrammed coordinates.

This September, the Navy's Rapid Acquisition of Manufactured Parts (RAMP) project produced its first circuit boards directly off PDES files, according to Curtis Holcomb, director of the South Carolina operations of Arthur D. Little, Inc. His company, along with Battelle Memorial Institute, Grumman Corp.'s Grumman Data Systems Division and Seacor, Inc., is responsible for RAMP.

Last year, RAMP turned out it first machine tool parts from PDES, Holcomb explained.

A better standard

PDES is considered superior to the aging International Graphics Exchange Standard in use today, Holcomb said, because PDES allows specification not only of graphics data, but of functional properties such as design tolerances.

Both military and commercial users will be building PDES repositories to house weapons systems information. A study by Hewlett-Packard Co. estimated that the U.S. government and contractors will spend $10 billion to $15 billion in the next five years to make their information management, design, manufacturing and logistics systems CALS-compliant.

"There is at least a 30% cost benefit in implementing CALS," said Robert Kidwell, vice-president of information systems at Syscon Corp., which is building a data base repository.

PDES, Inc., a 27-member industry consortium established in April 1988, is working to ensure that commercial requirements are incorporated into the international STEP standard.

Device pares down need for adapters

continued from page 13

to 19.2K bit/sec. These boards include support for AT&T's Digital Multiplexed Interface Mode-2 and CCITT V.120 rate adaption protocols to enable users to transmit 19.2K bit/sec data over 64K bit/sec B channels.

In addition to supporting host interfaces, the RS-232 ports enable Pipeline to work with a modem pool. Remote users dial into a modem, which passes data to Pipeline. That data is then passed over a BRI line to a target host.

Although initially positioned to support ISDN, in the future Pipeline will support interfaces for other switched services such as frame relay, switched 384K bit/sec services and Switched Multimegabit Data Services. Ascend will also add boards that link Pipeline to Ethernet and token-ring local-area networks.

Analysts said Pipeline will benefit users looking to link low-volume remote terminals to a host.

"The perfect candidates are businesses like gas stations and small retail shops" that periodically have to pass credit card authorization requests to a host, said Nick Lippis, a principal at Northeast Consulting Resources, Inc. in Boston.

A Pipeline supporting four BRIs and 32 X.25 ports costs $16,000; a version supporting 16 BRIs and 32 X.25 ports is priced at $22,250. Pipeline is available now.

Pricing may be wolf in sheep's clothing

continued from page 13

worth, N.J. "On the face of it, your gut feeling is the price sounds awfully high. But until you have comparative products, you don't know what to compare it against."

The only direct competitor to NetView is Systems Center, Inc.'s Net/Master. Kapoor said Net/Master is generally less expensive than NetView, although that's difficult to quantify because Net/Master is typically sold on a custom basis.

Bart Stuck, president of Business Strategies, a consultancy in Westport, Conn., said there is another hidden cost to NetView in that it requires more sophisticated personnel to operate it than Net/Master does.

Stuck said Net/Master's Network Control Language is a powerful fourth-generation language that lets relatively unsophisticated users configure the system to meet their needs, thereby requiring fewer people to run it than NetView does.

See The FAXNeT Form on Page 20

UP TILL NOW, the conventional way to build a LAN internetwork was to use private lines. And to connect each LAN to every other LAN or host. The management issues were

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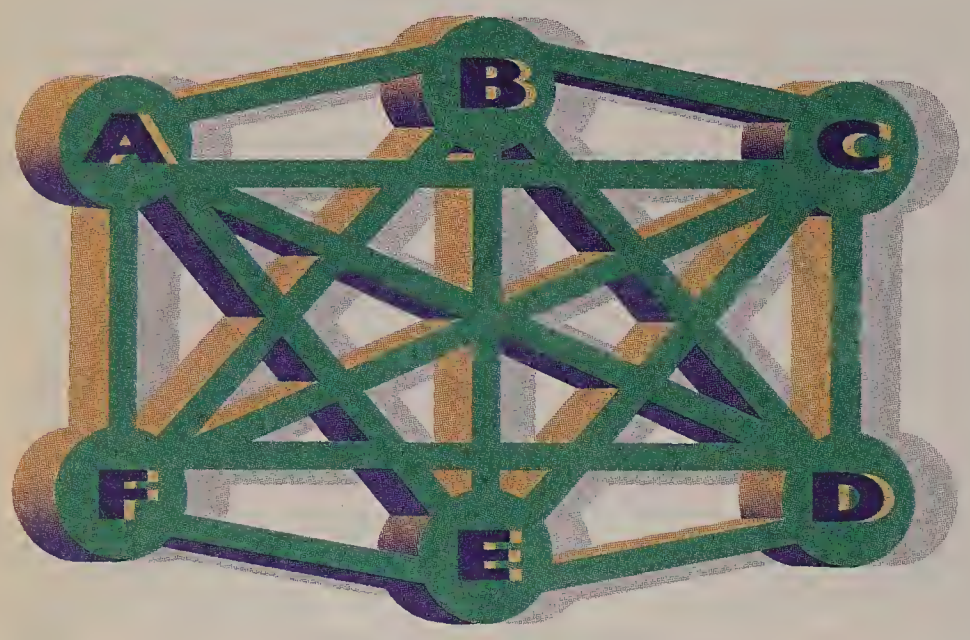

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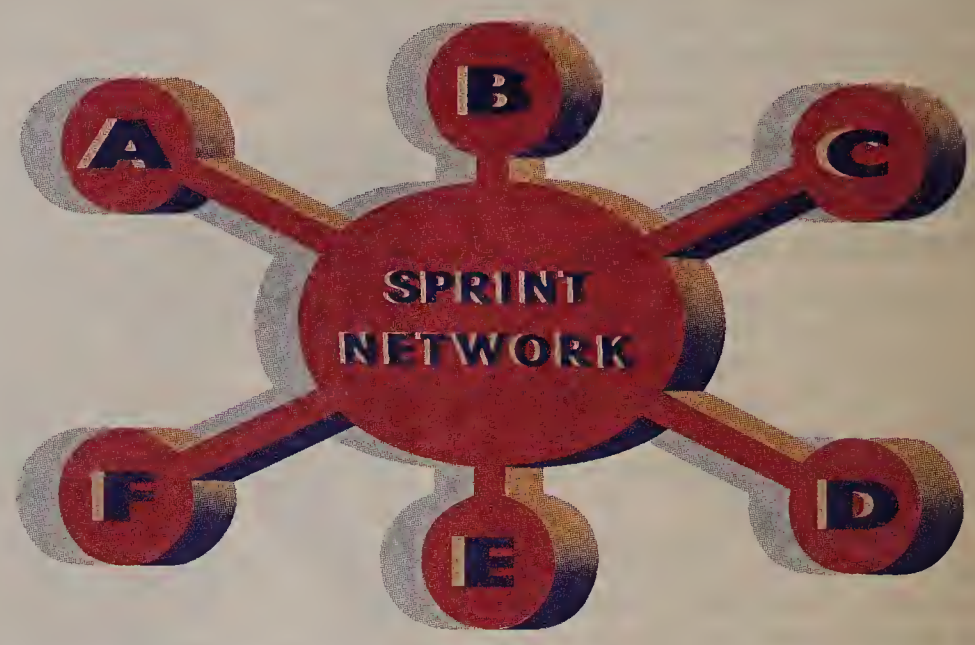

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Worth Noting

"Servers are not processor-constrained in the current environment. They're disk- and I/O-constrained. Throwing an extra processor at it doesn't buy users anything."

John McCarthy
Director of professional systems research
Forrester Research, Inc.
Cambridge, Mass.

Netnotes

Xyplex, Inc. and **SynOptics Communications, Inc.** last week announced a technology exchange agreement under which Xyplex terminal servers will be integrated into SynOptics' LattisNet System 3000 local-area network hub.

The Xyplex terminal servers will complement SynOptics' support for Ethernet, token-ring and Fiber Distributed Data Interface in the LattisNet System 3000. The product will be based on Xyplex's Maxserver 1500, a 16-port terminal server that supports Transmission Control Protocol/Internet Protocol and Digital Equipment Corp.'s Local Area Transport protocol.

The product is expected to be available in the first half of 1991, but pricing has not been determined.

Banyan Systems, Inc. and **cc:Mail, Inc.** last week announced a version of cc:Mail's electronic mail product designed specifically for Banyan's VINES local-area networks. VINES and cc:Mail for VINES will share a VINES StreetTalk global directory data base. Prior to this, cc:Mail's E-mail products ran on VINES and other LANs but required users to maintain separate data bases.

The cc:Mail for VINES product runs on the LAN server and each LAN node. It is expected to be available in the first half of 1991, and pricing is expected to mirror the company's existing pricing structure. The existing cc:Mail product costs $695 for 25 users.

Action Technologies adds cost-cutting feature to MHS

Service now offers single-instance transmission.

By Tom Smith
Senior Writer

ALAMEDA, Calif. — Action Technologies, Inc. recently enhanced its local-area network-based Message Handling Service (MHS) to cut users' wide-area network communications costs.

MHS is a messaging protocol for DOS-based LAN operating systems that many vendors of electronic mail systems use as the underlying technology for storing and forwarding messages.

For example, the product is licensed by Novell, Inc. for use with NetWare.

MHS Version 1.2, which runs on LAN file servers, features a new cost-saving function called single-instance transmission. If users at one site need to transmit a message to multiple recipients at a remote site, they can now send one message and have it duplicated for distribution at the receiving end.

In the past, users had to create separate files and transmit them individually.

In addition, MHS 1.2 has been improved to enable users to attach as many as 64 files to a single message. The previous limit was a single file.

MHS 1.2 costs $495 for an unlimited-user version and $89 for a stand-alone version. An upgrade to the newest release is priced at $25.

Action also introduced Version 2.1 of The Coordinator, its MHS-compliant E-mail application, which was enhanced to support the upgrades offered in MHS 2.1.

The new release features a Group Calendars function, which allows users to see a graphical depiction of employees' schedules in order to arrange meetings.

The new version of The Coordinator was also enhanced with a capability called session recovery.

Session recovery allows a session interrupted by a communications line failure to resume at the point it was discontinued, rather than starting anew. This will save users time and money on transmission costs.

Pricing for the new version varies according to the number of users, from a stand-alone version for $600 to a 100-user version that costs $7,500. Upgrades range in price from $150 to $1,875.

Interphase hub ties FDDI workstations to backbone

DALLAS — Interphase Corp. recently introduced a hub that links multiple Fiber Distributed Data Interface workstations to an FDDI backbone.

The new fiberHub 800 FDDI Concentrator is a stand-alone device that provides physical attachment to an FDDI ring for as many as six single-attach or three dual-attach FDDI workstations.

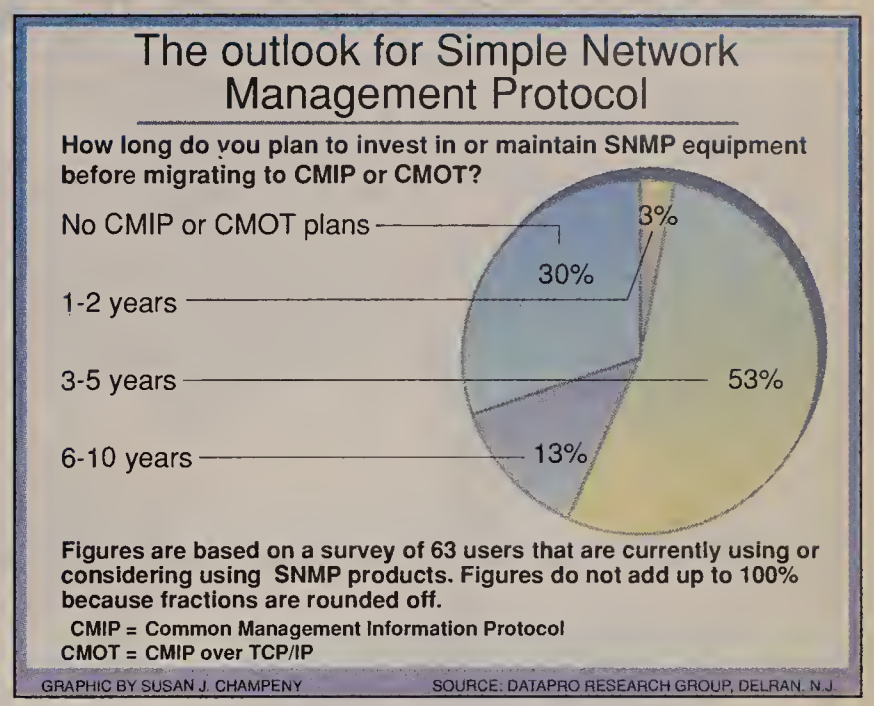
Using devices such as the fiberHub 800 to connect single-attach stations to an FDDI ring provides greater network reliability because the hub supports a dual attachment to the backbone.

Single-attach FDDI workstations use two fibers — one for sending and the other for receiving — to connect to one of the two 100M bit/sec rings supported by FDDI networks. Dual-attach workstations connect to both of the rings. FiberHub 800 is equipped with FDDI Station Management software, which is used to perform physical-layer management of all FDDI workstations attached to the hub.

Interphase also announced support for the latest release of Station Management, Version 6.1, in software running on its V/FDDI Peregrine FDDI adapter board for computers based on the VMEbus, such as Sun Microsystems, Inc.'s workstations. That FDDI adapter, which is offered in single- and dual-attach versions, was introduced in February.

The key enhancement in Station Management Version 6.1 is the ability to create FDDI data frames that include identifying information about the workstations on the network. Prior to Version 6.1, Station Management provided more basic information such as duplicate addresses and data about broken cables.

FiberHub 800 will be available in the second quarter of 1991. Pricing will range from $15,000 to $20,000, depending on configuration. Users of the V/FDDI Peregrine can receive a free software upgrade that supports Station Management Version 6.1. The software is available now.



User survey details SNMP shortcomings

Study finds failings with SNMP but shows that users aren't anxious to move to ISO standards.

By Tom Smith
Senior Writer

DELRAN, N.J. — Although vendors have taken steps to improve the functionality of their Simple Network Management Protocol (SNMP) net management systems, users say the products do not meet all their needs, according to a recent survey.

Despite the shortcomings, the survey indicates that SNMP will not be replaced or seriously challenged in the short term by the net management standard being developed by the International Standards Organization (ISO).

According to Datapro Research Group's "1990 SNMP NMS User Survey," only 3% of respondents said SNMP products meet their needs completely, while 33% said the products adequately meet their needs. In contrast, 30% said their SNMP products "somewhat" meet their needs and 27% said the SNMP managers "just barely" meet their needs.

SNMP, the network management protocol for Transmission Control Protocol/Internet Protocol, consists of SNMP software for managing systems and SNMP agent software for the devices to be managed.

The results indicate that vendors have not optimized their products to take full advantage of SNMP's capabilities; they do not demonstrate any shortcomings of the protocol itself, according to Jill Huntington-Lee, associate editor/analyst at Datapro, based here. "Vendors could add more features to their products before the protocol itself becomes a limiting factor," she said.

Datapro surveyed 600 user companies, receiving 63 responses: 30 from current SNMP users and 33 from prospective users. The company estimated that the 30 current SNMP users represented 10% of the installed base of turnkey SNMP systems at the time the survey was conducted.

Asked to identify deficiencies of current SNMP products, users cited the inability of vendors' products to support the custom management capabilities of other suppliers' SNMP software. Vendors have, however, begun to address that issue since the survey was taken ("Feature-rich SNMP wares capture INTEROP spotlight," *NW*, Oct. 15).

Relational DBMSs lacking

Users said products lack relational data base capabilities that would enable them to perform historical comparison of error rates and utilization data. Huntington-Lee said several vendors are beginning to migrate their products from flat-file to relational data bases, which will enable users to more easily manipulate and compare historical net management data.

Datapro also asked the users if there were specific features lacking in their current SNMP managers. The most desired feature was the ability to create a network topology map automatically.

This would enable network managers to view a geographical map of their network that is automatically created by the system, rather than performing that task themselves.

Although users pointed out some dissatisfaction with the technology as currently implemented by vendors, their re-

(continued on page 59)

FAXNeT is a service designed to help readers of *Network World* gather important information via FAX on products and services advertised in *Network World*.

How to Use FAXNeT

Listed below in the FAXNeT Directory are the FAX numbers of participating advertisers in this week's issue of *Network World* and the page number where the ad appears. To use FAXNeT cut out the FAXNeT form and make a copy of the form for each inquiry you want to make. Then just FAX it to the vendor's number listed in the FAXNeT Directory.

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- ☐ Request for Information

Purchase Timeframe
- ☐ Within 60 Days
- ☐ Within Six Months
- ☐ Within One Year

Scope of Purchase Responsibility
- ☐ Enterprise Wide
- ☐ Departmental

Purchase Influence/Number of Sites
- ☐ One Site
- ☐ 2-9 Sites
- ☐ 10-20 Sites
- ☐ 21+ Sites

Product Advertised: _____

_____

Intended Application: _____

_____

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This week's FAXNeT ADVERTISERS

Dialogue

Do you expect frame relay to give packet switching the boost it needs to compete effectively with circuit-switched technology?

"We are hopeful about frame relay. It has potential for merging all our data streams, as well voice and image, down the road.

"We'll probably first implement frame relay in our private network and then migrate traffic to the public net once [vendors] introduce frame relay-based services."

Charlie Snell
Director of computing and communications services
Harris Corp.
Melbourne, Fla.

"The expectation of many people, myself included, is that frame relay will give packet switching a competitive boost.

"We have dedicated voice and data networks, and it would be a real boost to have bandwidth-on-demand for our particular applications, instead of dedicated channels.

"We're very interested in it and are watching it closely, but it's still too early. Standards haven't been finalized yet, and we want products that have a proven track record."

Chuck Garrison
Vice-president of telecommunications
Chicago Board Options Exchange
Chicago

"I think users will see frame relay as a way to go because it's one of the few technological ideas that vendors seem to have embraced together.

"When only one or two vendors support a new technology, users are reluctant to view it seriously.

"But it seems a lot of vendors are in favor of frame relay and are telling users it will be there, so I expect it'll be competitive in the market."

Jeff Hafer
Telecommunications manager
GPU Service Corp.
Reading, Pa.

Network World *invites users to respond to future "Dialogue" questions through our Bulletin Board System (BBS). For information on how to access the BBS, see the Table of Contents on page 2.*

Hospital improves services through electronic imaging

Stores medical records on-line for easy access.

By Maureen Molloy
Staff Writer

FITCHBURG, Mass. — To better manage a growing mountain of information and improve patient services, Burbank Hospital has implemented an innovative imaging system that enables hospital personnel here to quickly retrieve a variety of medical records.

Deployment of the imaging application — the first phase of Burbank Hospital's three-step plan to build a completely integrated health care system by 1992 — addresses the chronic problem of managing a sea of paper that needs to be accessed by numerous people, according to James Hauck, director of information systems.

"Physicians no longer have to wait for the medical records department to retrieve patient histories. They can directly obtain the file on-line," Hauck said. "The more information that can be made available at the point of care, the better the quality of patient care."

Hauck said the old paper-based medical record system was plagued with time-consuming information retrieval, as well as incomplete and misplaced files. Another drawback was that only one person at a time could access paper-based records.

Imaging allows simultaneous access to the document by many people. This is especially important since, in the course of one day, an average of eight people — including doctors, nurses, insurers and quality assurance representatives — need to review a patient's medical record.

Document imaging also decreases the cost of handling and long-term storage of medical records. The average in-patient stay at Burbank, for instance, results in an 80-page medical record and, overall, the hospital creates as many as one million pages of new records each year.

With the new system, medical records are electronically captured as images using a document scanner and then stored on optical disks. During the scanning process, images are indexed by patient name and number, physician and principal diagnosis in a data base on a Wang Laboratories, Inc. VS 5000 computer.

That allows end users to make data base inquiries and provides

(continued on page 24)

GUIDELINES
BY WAYNE ECKERSON

Net data base could ease managers' info overload

Take a look at most network managers' offices and you'll see reports, brochures, manuals, clippings and publications piled high on disappearing desktops or crammed into bulging cabinets and sagging bookshelves.

It's known as information overload, and it's a fact of life for network managers. Somehow, network administrators have to bring order to the dizzying pace of technological change without becoming victimized by it. As one network consultant recently said, network managers never get bored, just burned out.

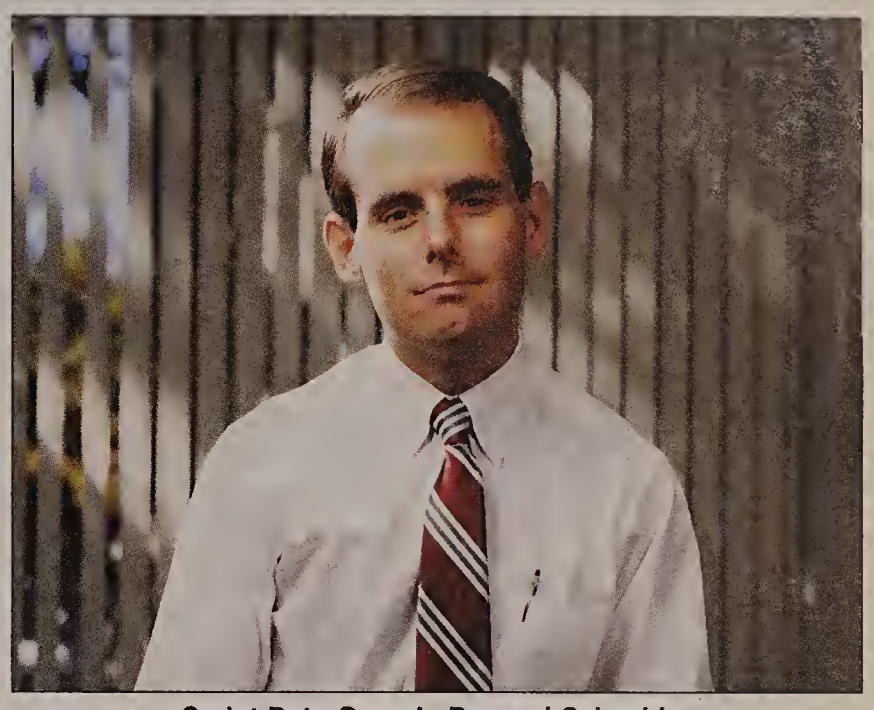
Some managers try to take a proactive stance by assigning a couple of staffers to track emerging technologies or research how the company can leverage existing technologies to solve business problems or support mission-critical applications.

But not every company can afford the luxury of an advanced technology group, especially as senior executives become more cost conscious.

This leaves most network managers to cope with the swelling tide of information on their own.

Some network administrators use conferences as a way to see all the latest products and services in the least amount of time. User group meetings and educational seminars can also be valuable. Unfortunately, these meetings take managers away from the office, putting them further behind in their work and exacerbating the sense of information overload.

(continued on page 24)



Sprint Data Group's Bernard Schneider

User turns vendor: a first-hand account

Former net manager talks about the challenges and opportunities of moving into the vendor camp.

By Wayne Eckerson
Senior Editor

For Bernie Schneider, the move from a user company to a vendor was more than just a job change; it was a culture shock.

While some network executives are catapulted into the vendor camp by outsourcing arrangements or downsizing efforts, Schneider, who was head of telecommunications at United Stationers, Inc. in Des Plaines, Ill., made the change of his own accord. He said it has opened his eyes to a whole new world and taught him things that could have helped when he was a network manager.

"They're two different cultures," said Schneider, now director of product management with Sprint Data Group in Kansas City, Mo., a position he took in July.

"You have to be much more aggressive and flexible when you work for a carrier," Schneider said. "It's definitely not for everyone."

"You have to be much more aggressive and flexible when you work for a carrier."

▲▲▲

Schneider said he made the switch because he was looking for a new challenge in the network field and was attracted by the fast-paced, high-stakes environment at Sprint.

"As a user, you're in the driver's seat; you pick your vendors and set your direction," Schneider said. "But as a vendor, you're being pushed by thousands of customers representing numerous market segments who all want to go in different directions."

Many of Schneider's colleagues thought he was crazy to work for a vendor.

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Schneider said the financial pressure is also high. The product line he oversees is expected to generate a certain amount of revenue, and the group's success — or failure — in meeting financial goals can have a dramatic impact on the company.

And while the pay is better, the hours are much longer, he added.

Many of Schneider's colleagues on the user side thought he was crazy to work for a vendor.

"Before I left, my boss told me that someday I would call him and say I had realized how great a job I had at United Stationers," Schneider said. "While the job was fun and gave me a great deal of autonomy and control, the opportunity for growth is greater on this side."

(continued on page 24)

AT&T introduces a breakthrough

Now that AT&T ACCUNET® Switched Digital Services has 384 kbps, you can dial up full-motion video conferences whenever you want.

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in video conferencing.

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The right choice.

Navy chief works to get computing, nets shipshape

Admiral consolidates operations, acquisitions.

By Ellen Messmer
Washington Correspondent

ARLINGTON, Va. — Vice-Adm. Jerry Tuttle has launched an offensive to reform the U.S. Navy's computer and communications operations, as well as its procurement methods.

By consolidating oversight of the Navy's scattered telecommunications centers and data processing installations into one authority, Tuttle, who is chief of naval operations, hopes to achieve cost savings and pave the way to network modernization.

In a recent interview at the Pentagon's Space and Electronic Warfare Office here, Tuttle discussed his plans for upgrading the Navy network.

As part of this effort, an Information Technology Acquisition Center was recently formed to act as a central procurement authority for computer and communications purchases.

Formed Oct. 1, the new command combined the former Automatic Data Processing (ADP) Selection Office, the Naval Commercial Communications Office and other support offices into one unit.

Tuttle said the Navy's previously decentralized purchasing approach led to higher costs. For instance, it reduced the service's bulk buying power.

"A long-range investment strategy can save a lot of money," said Tuttle, who added that a single purchasing authority will operate more efficiently than multiple bureaucracies.

Tuttle supports the establishment of umbrella contracts, open-ended contracts under which Navy purchases for specific products could be aggregated for bidding. End users would order directly from the vendor that wins the umbrella contract.

Formation of the Information Technology Acquisition Center is but one of several steps taken by the vice-admiral since he assumed his post in May 1989.

Last April, Tuttle brought the Navy's computer and communications operations under the jurisdiction of a single command — the Naval Computer and Telecommunications Command (NCTC). NCTC combines the Naval Telecommunications Command, Naval Data Automation Command (NAVDAC) and the Navy's central design agencies.

NCTC will be charged with oversight of the Navy's 203 telecommunications centers and its data processing centers. As part of the move, Tuttle ordered the consolidation of roughly 40 data processing installations into 17 major centers.

NAVDAC and the Naval Telecommunications Command headquarters have already been merged into the NCTC headquarters in Washington, D.C.

Throughout the country, the Navy's telecommunications centers and the Naval Regional Data Automation Centers are either being merged or their missions are changing.

"I want this desk to have authority for all media for the user — telecommunications, encryption, ADP," Tuttle said.

The move to bring computer and telecommunications functions under one authority could simplify network upgrades in the future. In addition, the Navy hopes personnel with different expertise will share knowledge across traditional boundaries.

> Driving the changes is Tuttle's desire to do away with the inefficient procurement process that has led the Navy down the path of high costs and obsolete equipment.
>
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The telecommunications centers today provide vital messaging functions for the Navy. While the tools they use are reliable and secure, they're outdated and expensive to operate.

For example, Navy personnel must type out messages onto sheets of paper, which are fed into a scanner and delivered across private networks such as the Department of Defense's store-and-forward Automatic Digital Network. Messages are printed out at the receiving center, copied and hand delivered.

The Defense Department has plans for a new Defense Message System (DMS), which will operate on today's packet-switched Defense Data Network (DDN) with X.400, X.500 and specialized security features, including desktop-to-desktop encryption. More specific details of the DMS architecture are expected to be released in November, but full implementation is not likely until the year 2000.

The Navy's data processing units now use DDN for data transfer; therefore, messages and data processing will eventually travel across the same network. Provisioning lines should be far less expensive when the functions are pooled, Tuttle said.

The vice-admiral also wants to better utilize the processing power of the Navy's mainframes that are scattered across the globe.

"I want them all tied together so I don't have to buy any more mainframes," he said.

Tuttle said the Navy is saddled with at least five 20-year-old Unisys Corp. mainframes that still utilize punchcards.

He also said he would rather lease than buy new ADP equipment in the future because of the rapid changes in technology. But Tuttle said his hands are tied by regulations that forbid leasing of information systems without lengthy cost analyses to show the benefit of leasing over buying for the life cycle of the application.

Tuttle has submitted special waivers to the secretary of the Navy requesting permission to lease mainframes on a trial basis.

Driving this and other changes is Tuttle's desire to do away with the inefficient procurement process that has led the Navy down the path of high costs and obsolete equipment.

Referring to procurement, Tuttle said, "We have to institutionalize it so it doesn't become archaic again."

Hospital betters services

continued from page 21

access to images on image-capable personal computer workstations located throughout the hospital. Applied Data Systems, Inc. of Framingham, Mass., created the imaging software that runs on the VS 5000. Document imaging is integrated with other applications on the VS 5000, enabling those applications to use data from stored images.

During Phase 2 of the integration process, which Hauck expects to complete within a year, Burbank will integrate its Wang Integrated Image System (WIIS) with all existing computer systems and applications. It will be linked to the hospital's Shared Medical Systems hospital information application on a Digital Equipment Corp. VAX.

The imaging system will also be linked to a Novell, Inc. personal computer local-area network supporting the hospital's medical transcription unit and will be accessible from Clinitech laboratory services, a Burbank Hospital-owned joint venture company based in Worcester, Mass.

Eventually, Hauck said, all hospital personnel will have access to the imaging system.

Patient admission and discharge information will be directly downloaded from the hospital information system to WIIS. Word processing documents of physician notes from the transcription unit and lab reports from Clinitech will be transferred to optical disk and be archived as images in patients' electronic folders.

Hauck said the final and most difficult phase in developing a fully integrated point-of-care system for the hospital will be to create an intelligent net that integrates clinical and financial data bases and applications.

He said this will allow any user to access any application on any computer from anywhere on the network. He said he is currently searching for a systems integrator to help in building the net.

Hauck designed the original application components after gathering input from a team of doctors and nurses at the hospital who outlined the types of information they needed to access. He then began a joint development with Wang and Applied Data Systems.

Raymond Fredette, Burbank Hospital's executive vice-president, said the imaging system was devised with better quality of patient care in mind.

"The greatest benefit of optical disk imaging is that it gives the physician more information in less time, and that's a tremendous help in deciding how to treat the patient," he said. "In some instances, this fast access can contribute to saving lives when a physician must act quickly and information is needed now."

User turns vendor

continued from page 21

So far, Schneider said he has found that the new job suits him well, and he doesn't envision returning to the user side any time soon.

"To a large extent, the job is what I expected: It's aggressive and fast-paced, but that's what I like," he said.

The biggest adjustment Schneider had to make after moving to Sprint was learning a new language.

He said Sprint uses many acronyms to refer to hundreds of parts and features of its products, and it took him a while to learn all of them.

If I could do it over . . .

Besides learning a new set of acronyms, Schneider said he has discovered many things about the way carriers operate that could have benefited him as a user.

He said carriers are much more open to user requests than he ever realized. Many of Sprint's products grew out of discussions among network managers and Sprint representatives about users' requirements and needs.

"I was surprised to learn just how much carriers can do to tailor their products to meet user needs," Schneider said.

"Our view was that our relationship with the carrier had to be adversarial," he said. "We used to talk about price and then put the gun to their head. We would usually get what we wanted, but we ended up stretching the carrier real thin."

Schneider said users can benefit from a more open approach to working with vendors. Users should be specific about their current and future requirements so carriers can try to shape services to meet those needs, he explained.

"While there are limits to what carriers can do for you, they are very eager to accommodate you," Schneider said.

Data bases could ease overload

continued from page 21

Most net managers subscribe to multiple trade publications, which they generally try to read at night or on the weekends. But no matter how well-intentioned or disciplined network administrators are, there are few who can honestly say they're able to stay ahead of it all.

What's really needed is an on-line data base that network managers can access from their office or home that provides them with the latest information about network topics. Instead of stacking periodicals and reports a mile high in their office or home, network managers could search a data base and download all articles related to their project.

I'm not aware of any company that provides an on-line indexing and article retrieval service exclusively for networking, although a few come close.

The Dow Jones News Retrieval service provides on-line access to a host of business-related publications. Mead Data Central's Nexis service does the same but also uses many technology-based trade publications, including *Network World*.

The problem with these services is that they're expensive and don't include the broad array of networking publications net managers would want to survey.

Other companies distribute CDROMs or floppy disks containing articles on specific topics on a monthly or quarterly basis. One company distributes a CDROM containing articles related to personal computers.

While these offerings could help plug some of the leaks in the dike, they won't completely ease the information overload. Perhaps it's time for some enterprising network manager or vendor to take the initiative and develop an on-line news retrieval service that will truly serve the information needs of network managers.

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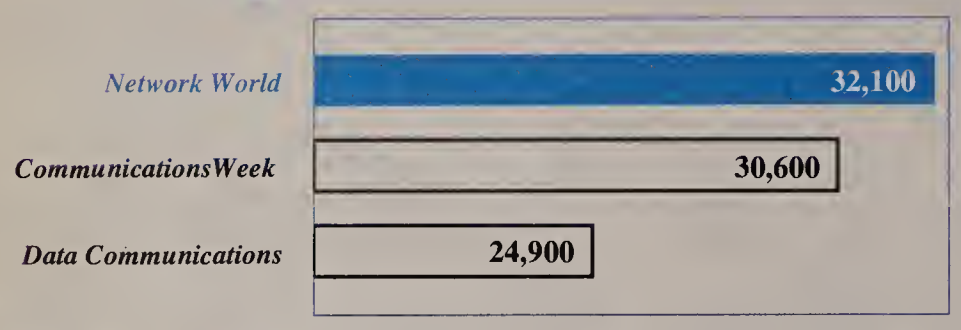
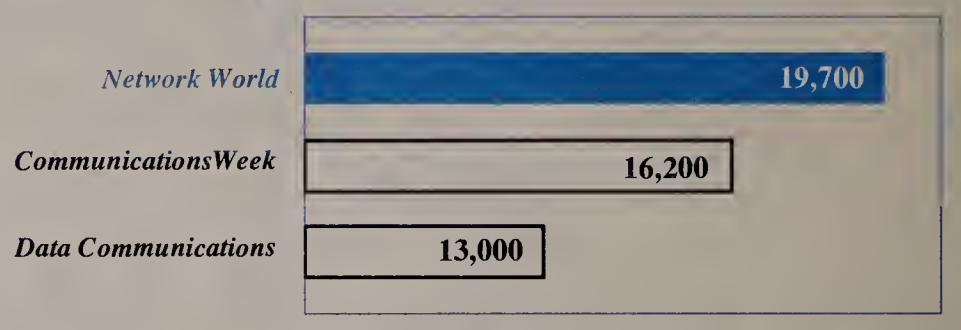
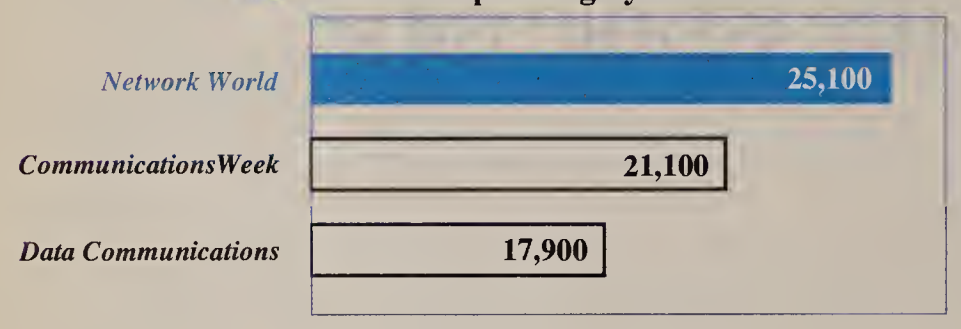
Number of readers who plan to purchase Local Area Networks



Number of readers who plan to purchase Wide Area Networks



Number of readers who plan to purchase Network Operating Systems Software



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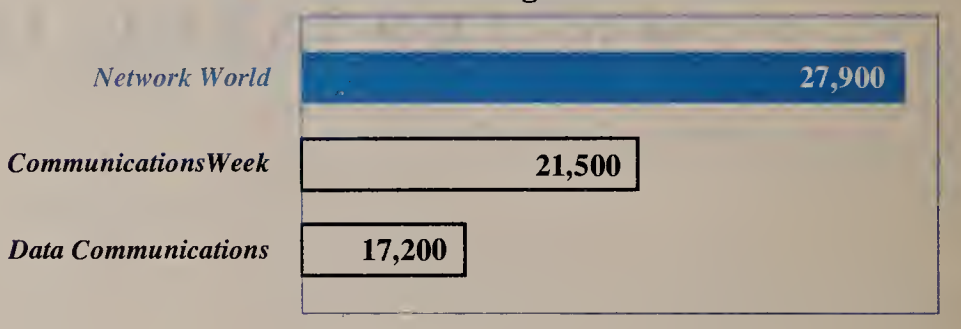
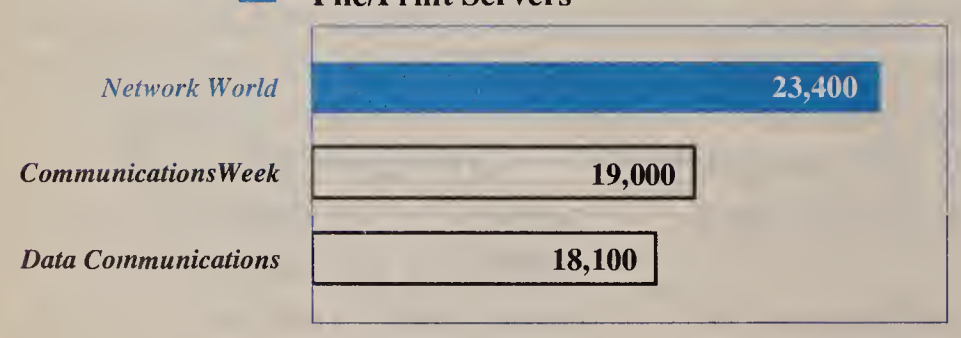
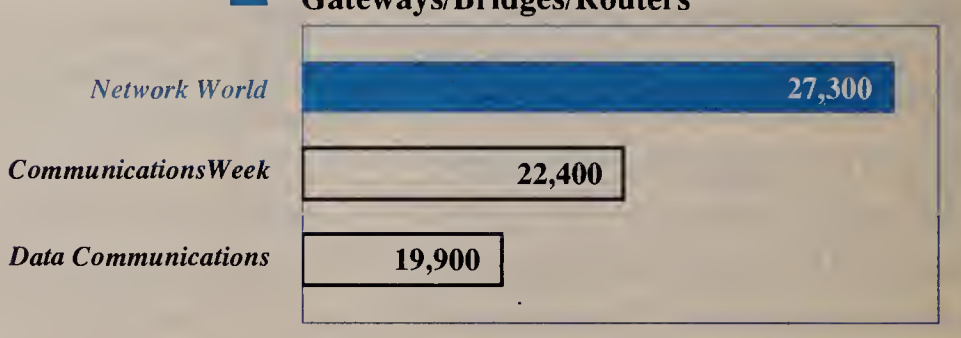


Number of readers who plan to purchase File/Print Servers



Number of readers who plan to purchase Gateways/Bridges/Routers



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NETWORK WORLD

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USER STRATEGIES, INTERNATIONAL SERVICES & REGULATION

Worth Noting

Earlier this month, Communications Satellite Corp. established what is reportedly the first Integrated Services Digital Network link to Romania. A 2.048M bit/sec Primary Rate Interface service ran over satellite facilities from COMSAT headquarters in Washington, D.C. to a booth at the International Fair in Bucharest.

World News

France Telecom last week announced plans to interconnect its domestic virtual net service, Colisee, with AT&T's Global Software-Defined Network (SDN) service by the first quarter of 1991.

Users access France Telecom's Colisee by maintaining dedicated links to France Telecom central office switches in Lyon or Paris. These connections enable users to obtain customized, six-digit dialing plans for calls routed to the switches, said Manuel Barbero, director of sales and customer support at the French carrier's New York office.

According to France Telecom, the interconnection between Colisee and Global SDN will enable users to extend into France many of the features of a domestic SDN.

MCI Communications Corp. last week said it will introduce a commercially available interconnection between its MCI Mail service and British Telecommunications PLC's BT Gold public electronic mail service on Dec. 1. The interconnection will be made via an X.400 gateway. An MCI spokeswoman said the link will enable MCI Mail subscribers to exchange messages with BT Gold subscribers for the first time.

Trade disputes threaten to thwart GATT negotiations

U.S. may be forced to reject telecom part of pact.

By Barton Crockett
Senior Editor

GENEVA — As negotiators work to hammer out an international trade treaty that could lead to unprecedented telecommunications reforms, several conflicts are developing that could stop any policy from being adopted.

At meetings here of the General Agreement on Trade and Tariffs (GATT), a 97-nation organization that sets international trade rules, conflicts over equal treatment of countries ascribing to GATT agreements and disputes over such topics as trade in agricultural products threaten to make it impossible for the U.S. to push through telecommunications reforms favorable to users.

The U.S. and other countries are working to adopt GATT guidelines that would result in reasonably priced private lines and limit restrictions on private nets ("Treaty could reform int'l network rules," *NW,* May 21).

These provisions have been suggested for inclusion in a Telecommunications Annex to a new GATT agreement for trade in service industries. If accepted, it would be the first time these principles have been included in international law.

"There are still a number of issues to be resolved," said a U.S. official closely involved in the negotiations who requested anonymity. "I still think there is a reasonable chance [of] a services agreement but it isn't certain."

The GATT services agreement is scheduled to be one of 15 GATT agreements concluded by December. The other agreements address such issues as trade in textiles, agricultural products and the establishment of intellectual property rights.

Three developments

Any one of three developments could kill the telecommunications annex and services portion of the current round of GATT negotiations, which commenced in Uruguay in 1986.

One potential problem cropped up earlier this month when U.S. negotiators expressed concerns during talks here that, as currently phrased, the Telecommunications Annex and services agreement could limit the ability of the U.S. government to take unilateral action against countries deemed to be competing unfairly in the U.S. telecommunications market.

For example, GATT may make it difficult for the U.S. to slap tar-

(continued on page 28)

AICC cancels meet, seeks greater user involvement

NEW YORK — A new association for users and vendors involved in international communications last week postponed its first meeting until it can generate a significant user following.

The Alliance of International Customers and Carriers (AICC), a user and vendor group being formed by Roger Bruhn, a former Lockheed Corp. net manager, had planned to hold its first meeting on Oct. 25, in conjunction with the annual conference and exposition of the Communications Managers Association here.

But in a recent letter to people interested in the AICC, Bruhn canceled the meeting, writing that "At this time, it is obvious that more user involvement and participation is needed."

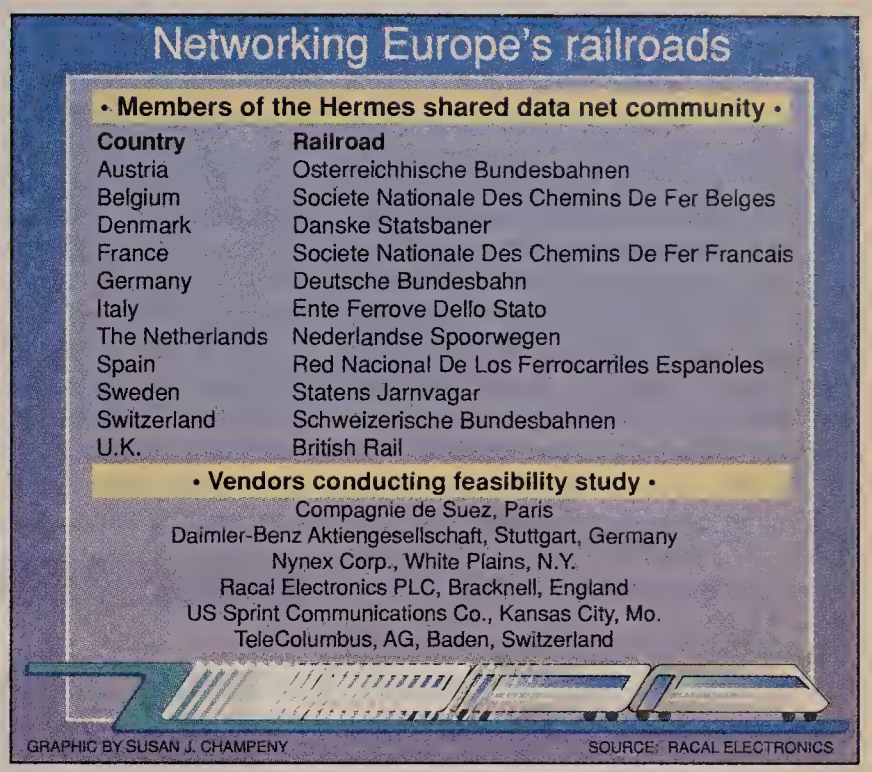
The meeting was supposed to allow attendees to discuss the overall direction, objectives and priorities of the AICC, which Bruhn said is meant to help users and vendors exchange information on global networking.

In a telephone conversation, Bruhn said only three users have agreed to join the AICC and pay the $100 user membership fee. Another six users are in the process of joining the organization.

Thus far, Bruhn said, no vendors or carriers have agreed to join the group. Vendors are waiting for more users to commit to the group before putting up their $5,000 membership fee.

Bruhn said a renewed push to sign user members should increase user involvement in the the AICC, thus increasing vendor interest. He added that the results of a planned survey on user interest in a group such as the AICC should help persuade vendors to support the organization.

Bruhn said the AICC now plans to hold its first meeting in February. For more information, write to 1225 Vienna Drive, Suite 134, Sunnyvale, Calif. 94089, or call (408) 734-1272.



Hermes consortium upgrades rail net

Group of 11 railroads study plan to offer network services across Europe in competition with PTTs.

By Barton Crockett
Senior Editor

A consortium of European railroads recently announced plans to upgrade a shared data network in what could be the first move toward derailing PTT efforts to maintain a lock on terrestrial net services.

Eleven European railroads — known collectively as the Hermes community — have asked a consortium of six vendors to conduct a feasibility study that will examine, among other things, the practicality of using the shared net to provide private-line and other net services to users in competition with Europe's post, telegraph and telephone administrations.

Such an operation would be the first terrestrial-based, pan-European competitor to Europe's monopoly carriers and would offer users a consistent broadband net facility that could be used to build private networks spanning the continent.

"We will examine the issue of a broadband network, probably fiber and maybe some microwave," said a spokesman for Racal Electronics PLC in Huthwaite, England, which is acting as coordinator for the vendors conducting the study.

Hermes members include national railroads from Denmark, England, France and Switzerland. Vendors involved in the feasibility study include US Sprint Communications Co. and Nynex International Co. (see graphic).

The six vendors first will examine ways to upgrade the existing Hermes data net — probably by replacing the current aging crop of proprietary network hardware with more modern X.25 packet-switching technology.

Hermes railroads use the private data net to pass operational data among one another.

The study also will examine enhanced services that could be offered over the net, such as interrailroad electronic messaging, the Racal Electronics spokesman said.

The goal is to install the new packet-switching net within six months, according to an official statement issued by the Hermes members earlier this month.

> The operation would be the first terrestrial, European competitor to the monopoly carriers.
>
> ▲▲▲

The Racal Electronics spokesman said consortium members probably will supply the equipment used in the new packet network, although that is not guaranteed.

The study will also examine the practicality of eventually replacing the packet net with broadband facilities and, at some unspecified date, using the facility to compete with Europe's monopoly carriers.

(continued on page 28)

Hermes consortium upgrades rail net

continued from page 27

If they decide to sell network services, the Hermes railroads would be asking European regulators to fundamentally alter the existing regulatory landscape.

Changing regulations

Today, nearly all European countries, with the blessing of the European Commission, give their state-owned carriers a monopoly over operating terrestrial facilities used to offer public net services. The only common market country that deviates from this tack is the U.K., which has authorized full competition between two carriers operating separate terrestrial facilities since 1984.

Whether Hermes members can persuade regulators to approve a plan to offer services in competition with the PTTs is an open question.

Many observers doubt regulators would back the idea.

"I don't think things will change enough to make it viable," said David Lewin, a director at Ovum, Ltd., a network consultancy in London.

But other observers point out that if anyone could obtain permission to use a separate terrestrial network to offer competing services, it would be the railroads. The reason for this is partially because the railroads, like most European carriers, are government-owned.

Government ownership would help deflect local criticism that full competition would result in a loss of government jobs, according to Barry McAdam, a principal at Associated International Information Technology, Ltd., a London consultancy.

In addition, revenues and profits at many European railroads are declining. Net services could be used by railroads to increase profits, which many governments might favor since they own the railroads.

Keen on competing

Even though the Hermes members publicly have described their plans to offer competitive net services as only a distant goal, some participants in the project say privately that Hermes members will push to achieve that aim.

One sign of their commitment to offering alternative network services is the fact that the railroads have invited six firms, including two carriers, to participate in the feasibility study.

Building a mere packet net probably would not require so many consultants, according to a spokesman for one company involved in the project who asked not to be identified.

The source noted that the involvement of US Sprint is particularly important. This is because US Sprint originated as the network services unit of Southern Pacific Railroad and could use its experience to provide valuable advice to the Hermes community members about launching a new carrier.

"That's why they've got so many parties involved — so they would find it easier to get investors and go ahead [with the project]," the source said. "It doesn't take a rocket scientist to figure out what's going on."

Disputes threaten to thwart negotiations

continued from page 27

iffs on telecommunications goods deemed to have been dumped at unfairly low prices or to unilaterally order one nation to lower accounting rates used to set international telephone rates, U.S. officials said.

U.S. negotiators and carriers said that if the U.S. gives up these powers, its network market will be open to all foreign inroads while foreign markets, which are dominated by monopoly carriers, will be closed.

"Our concern is that the current text seems to lock open the U.S. market for basic telecommunications services to foreign firms while closing markets overseas to U.S. companies," said Fred Tipson, deputy director for government affairs at AT&T.

Industry backing

AT&T has been joined by MCI Communications Corp., US Sprint Communications Co., the Consumer Federation of America and the International Communications Association in asking that the U.S. oppose the current version of the GATT services agreement because of concerns over the equal treatment provisions affecting basic telecommunications services.

At the trading table this month, U.S. officials proposed new language that could resolve their concerns by making it clear that in basic telecommunications markets, the U.S. could take unilateral actions against other countries.

But a U.S. official involved in the negotiations said it is not certain that the U.S. will be able rework the final GATT services agreement to satisfy U.S. concerns. If it cannot be revised, the U.S. may not sign the GATT services agreement or accept the Telecommunications Annex, the official said.

Another problem is that disputes in other areas could halt the entire GATT trading round, thus killing the services agreement.

For example, volatile disputes over trade in agricultural products and textile quotas could cause governments to withdraw entirely from the current GATT negotiations.

And once finalized, the GATT agreements would still would have to be approved by the U.S. Congress prior to a March 31 deadline. Congress may actually veto U.S. participation in the GATT package of agreements.

Industry Briefs

continued from page 9

tions Group is building alliances with vendors and long-distance carriers with which it will team up on customer projects. The company announced that cisco Systems, Inc., Kentrox Industries, Inc. and Ungermann-Bass, Inc. will participate in Pacific Bell's trial of a Switched Multimegabit Data Service.

SynOptics' earnings soar. SynOptics Communications, Inc. recently posted substantially higher revenue and earnings gains for its fiscal third quarter, ended Sept. 28, keeping the company on a breakneck growth pace.

The wiring hub and internetworking company said earnings increased 255% to $8.16 million on revenue of $48.36 million for the third quarter, compared with earnings of $2.3 million on revenue of $20.9 million for the comparable quarter a year ago. Andrew Ludwick, SynOptics' president and chief executive officer, said the introduction of new token-ring, network management and 10BaseT products should account for continued revenue growth next quarter.

Wang forges IBM links. Systems Strategies, Inc., a Nynex Corp. subsidiary, last week said Wang Laboratories, Inc. has licensed its IBM Systems Network Architecture communications software for use with Wang's Unix-based Dynamix Series of servers. The agreement enables Wang to resell Systems Strategies SNA/3270, SNA/remote job entry and SNA/LU.6 software, which will enable workstation users to access an IBM mainframe through the Wang server.

EDS to test CLI gear. Electronic Data Systems Corp. (EDS) and Compression Labs, Inc. (CLI), a maker of video coder/decoders, last week announced a nonexclusive agreement under which EDS will test new CLI videoconferencing products on its global network and market the full line of CLI equipment to customers through an EDS subsidiary, VideoStar Connections, Inc. The agreement expands the role of VideoStar, which until now has provided management services only for private business television networks.

Wang deals for server tools. Easel Corp., a Woburn, Mass., supplier of graphical software development tools, and Wang Laboratories, Inc. last week announced an agreement to collaborate on a communications module that will allow Easel's Easel Development System to run in Wang's OPEN/server — VS environment. The Easel Development System enables programmers to create personal computer-based applications that feature graphical user interfaces.

The new communications module, scheduled for release in the first quarter of next year, will be sold in conjunction with the Easel/DOS Development System. The module will let users put a graphical user interface on existing terminal applications for the Wang VS.

Soft-Switch expands business horizons

continued from page 9

end of 1991. The product would be able to act as an X.400 message transfer agent, a gateway to an IBM Systems Network Architecture Distribution Services switch or as an electronic mail switch capable of routing messages among proprietary mail systems.

Soft-Switch plans to further the capabilities of its products by licensing its API technology, dubbed the Soft-Switch Network API (SNAPI), to various systems and application software developers. Under the SNAPI Partnership Program, agreements have already been signed with Comtex Scientific Corp., Lotus Development Corp., NCR Corp. and Sitka. Users are also welcome to participate.

Under the program, application developers can build multiple E-mail functions directly into their applications, rather than forcing users to exit an application to send or receive E-mail.

The first products available as a result of this program are expected by year end.

Acquisition

Separately, Soft-Switch said it has acquired Systems & Telecoms, Ltd., a maker of fax and telex gateways for IBM and Unix computer systems. Financial terms of the agreement were not disclosed.

Zisman said the Reading, England, company's offerings complement Soft-Switch's traditional focus on IBM environments and its emerging focus on Unix environments.

"Systems & Telecoms' Unix products and expertise are of obvious value to us as we expand into the Unix market," he said.

Currently, Soft-Switch users are able to send messages to fax machines or via telex but they must do so through a value-added network provider, Zisman said. Using Systems & Telecoms' VM Messenger and S-Message products, users can send a telex or fax directly over a dial-up line, he said.

The acquisition also serves to boost Soft-Switch's presence in Europe as the company expands its efforts overseas.

Systems & Telecoms' headquarters in Reading will become headquarters for SoftSwitch's U.K. subsidiary, Soft-Switch PLC. Also located at this facility will be the Soft-Switch European Support Center.

Lastly, Soft-Switch announced the establishment of subsidiaries in France and Germany for direct sale and support of products in those countries, as well as in Austria and Switzerland. For now, Soft-Switch will continue to sell through distributors in other countries.

ENTRY FORM

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The ICA will publish a journal of all qualified Call for Innovation papers. Presentations will also be considered for publication in ICA's award-winning *Communique'*, a publication that reaches communications executives in nine countries. In addition, Call for Innovation participants will be able to share their experiences with peers in a one-on-one setting on the exposition floor during special "Poster Sessions" at the ICA conference.

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PRODUCTS & SERVICES

THE LATEST OFFERINGS FROM VENDORS AND CARRIERS

First Look

Wellfleet adds OSPF support to bridge/routers

Wellfleet Communications, Inc. recently announced it will enhance its line of internetwork bridge/routers with a new software release that supports the Open Shortest Path First (OSPF) Interior Gateway Protocol.

OSPF is a next-generation network-layer routing protocol for the Transmission Control Protocol/Internet Protocol.

Developed within the Internet community, OSPF overcomes problems inherent in the existing Routing Information Protocol — including high overhead associated with distributing table updates — and is intended to replace that protocol.

Wellfleet plans to offer OSPF in the first quarter of 1991 as a standard feature on its bridge/router software. Existing Wellfleet users will receive a free upgrade.

The company also pledged to support later in 1991 the Intermediate System-to-Intermediate System protocol for use in Digital Equipment Corp. DECnet Phase V nets and Dual Intermediate System-to-Intermediate System, a routing protocol for use in Open Systems Interconnection and TCP/IP networks.

Wellfleet Communications, Inc., 15 Crosby Drive, Bedford, Mass. 01730; (617) 275-2400.

NCD X terminals boast twisted-pair connection

Network Computing Devices, Inc. (NCD) recently announced that its X Window System terminals will support an optional 10BaseT interface that allows them to be directly connected to an Ethernet local-area network using unshielded twisted-pair wiring.

The 10BaseT interface, like the existing Ethernet interface NCD offered, is included in the cost of the X Window terminal.

Current customers can exchange their Ethernet boards for the new 10BaseT interface for $500.

Network Computing Devices, Inc., 350 N. Bernardo Ave., Mountain View, Calif. 94043; (415) 694-0650.

Sequoia to enhance its Series 300

MARLBOROUGH, Mass. — Sequoia Systems, Inc. last week said it will redesign its Series 300 fault-tolerant systems to support a VMEbus architecture, enabling users to support a broad range of existing communications products.

Sequoia also said it will enhance the Series 300 to support the AT&T System V Driver Kernel Interface (DKI), which will make it easier for users to write application device drivers for off-the-shelf communications products.

In addition, the company announced several statements of direction supporting various products that provide Series 300 users with access to public net services and IBM environments, as well as enable the fault-tolerant systems to operate in Open Systems Interconnection-based networks.

Tom Clifford, Sequoia's communications products manager, said the company opted to jump to a VMEbus design because "it's the single biggest platform supported by third parties." Moving to the VMEbus will enable Sequoia customers to select from a wide array of communications interfaces currently on the market.

The addition of a 32-bit VMEbus running at 40M byte/sec will enable Sequoia to offer better communications processing performance than it currently can on its 16-bit Multibus-based Series 300 models, Clifford said. The VMEbus versions of the Series 300 are not expected to ship until the end of next year. The company has not set pricing.

Sequoia also pledged to support AT&T's DKI, a set of Unix System V.4 utilities. DKI will enable users and application developers to write a single device driver to an application without worrying about an upgrade if a new version of the application is installed at a later date.

The company announced a software interface to Network Systems Corp.'s Hyperchannel, a physical network interface that initially will connect Multibus versions of the company's Series 300 to Hyperchannel networks operating at between 50M and 100M bit/sec.

The Hyperchannel support is not expected to ship until the second quarter of 1991. Sequoia has not set pricing.

The company also said it plans during the next year to phase in new products and services, including an interface linking the Series 300 VMEbus-based models to AT&T's Datakit Virtual Circuit switch and a channel interface to IBM mainframes that supports LU 6.2 protocols.

Currently, Sequoia customers must emulate IBM 3270 terminals to access an IBM mainframe, which recognizes the Series 300 as a cluster controller. The channel link will provide users with high-bandwidth host links.

Sequoia also promised to roll out a suite of OSI products, including X.500 directory services, X.400 Message Handling Systems, virtual terminal support, and File Transfer, Access and Management (FTAM) support.

Sequoia Systems can be reached by writing to 400 Nickerson Road, Marlborough, Mass. 01752, or by calling (508) 480-0800.

QTRACS now runs on IBM mini lines

SAN DIEGO — QUALCOMM, Inc. last week announced a version of its satellite communications vehicle tracking software to run on IBM midrange computers.

By announcing QTRACS for IBM System/36, S/38 and AS/400 minicomputers, the company is making it possible to automatically update dispatchers about the location of a company vehicle. QTRACS is software used by trucking and shipping firms to support two-way satellite communications between a central dispatching site and vehicles on the road.

Previously, QUALCOMM only offered a version of the software for personal computers. That forced many users to either pass incoming reports verbally to other dispatchers not on the system or write a custom interface between the QTRACS software and a separate system used by dispatchers to log vehicle activity.

"It was very difficult, if not impossible, to pass information from one system to another," said Sara Garrett, a programmer analyst with McGil Specialized Carriers, a Marietta, Ga., trucking firm.

The minicomputer version of QTRACS makes it possible to support multiple dispatch terminals from a single system. Dispatchers share a single data base that can provide them with a map of truck locations and messages received from remote vehicles.

QTRACS/400 costs $15,000, plus $3,000 per year for maintenance.

Retix enhances line with SNMP support

Company also announces new bridge/router that combines remote bridging with TCP/IP routing.

SANTA MONICA, Calif. — Retix recently introduced a Simple Network Management Protocol (SNMP)-based network management product for its line of internetwork equipment and a device that combines the functions of the company's remote bridges with Transmission Control Protocol/Internet Protocol routing.

The 4942 Remote Bridge/Router supports standard 802.3 Ethernet, thin Ethernet and two wide-area network ports. The two WAN ports support data transmission rates up to 2.048M bit/sec, the European equivalent of T-1, and a range of interfaces, including V.35, X.21, RS-449 and domestic and European T-1 interfaces.

The IP routing capabilities of the 4942 will enable users to isolate IP broadcast traffic on local-area network segments to preserve bandwidth on the backbone network.

The device supports the same features as the Retix 4880 High Performance Remote bridge, including support for routable and nonroutable protocols and the IEEE Spanning Tree Protocol. It also supports special Media Access Control filters for source and destination addresses, packet type and IP addresses that add additional security and traffic control.

The 4942 costs $10,900 but has a promotional price tag of $8,900 until March 31.

Available now, the product can be managed by the company's existing personal computer-based 5010 Network Management Center or the concurrently announced 5025 Network Management Center.

The 5025, the company's first product to support SNMP, is Retix software implemented on a Sun Microsystems, Inc. SPARCstation.

A graphical user interface enables users to pinpoint errors and troubleshoot problems with Retix and other vendors' SNMP-compliant hardware. The device can monitor traffic levels, error rates, traffic flow and link capacity, as well as display system parameters. Retix also announced SNMP support across its family of products.

The 5025 Network Management Center, which includes the application software and a license from Sun for its SunNet Manager, costs $12,000 and is available now.

Contact Retix at 2644 30th St., Santa Monica, Calif. 90405, or call (213) 399-2200.

Power-On enables users to activate PCs via phone

SANTA CLARA, Calif. — Server Technology, Inc. recently unveiled a telephone-activated power device that enables users to control remote personal computers even if they have been turned off.

Power-On looks like an ordinary surge protector and power strip with four outlets, but it also has two telephone jacks: one that enables remote users to dial in to instruct the product to turn on attached devices and another that communicates with the personal computer's modem.

The product comes with personal computer software that enables applications to be operated remotely and supports file transfer and remote printing. Alternatively, it can be used with remote control software packages such as Microcom, Inc.'s Carbon-Copy.

In use, the remote user calls the device and instructs it to power up attached equipment. When the remote microcomputer is activated, it automatically loads the remote-control software. Then Power-On steps out of the modem link's way, letting the two microcomputers communicate. When finished, the unit will power down the remote equipment.

Server Technology estimates it can cost as much as $50 per month to keep a personal computer and laser printer running around the clock. Use of this device will enable customers to save as much as $30 per month.

Power-On, which doubles as a surge protector, costs $219.95 and is available now.

Contact Server Technology at 2332-A Walsh Ave., Santa Clara, Calif. 95051, or call (408) 988-0142.

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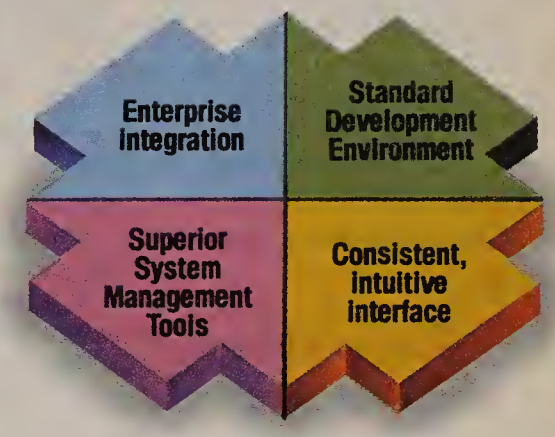

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OPINIONS

SYSTEMS NETWORK ARCHITECTURE

BY DARRELL ANDERSON

Don't despair: SNA is simply a facsimile of life

Have you ever wondered how IBM came up with the basic concepts that provide the foundation for its Systems Network Architecture? I think I know. SNA simply mimics personal relationships.

The purpose of SNA is to provide an orderly way to establish, maintain and terminate a session between a primary logical unit (an application) and a secondary logical unit (a terminal). In an SNA network, the overseer of the session establishment and maintenance procedure is something called VTAM. Now don't be concerned with what VTAM stands for. We know that it is an acronym because everything in computer jargon is an acronym.

Acronyms are used only to confuse and dumbfound the computer-illiterate. The purpose of having acronyms is to boost the egos of those who know them and provide a source of trepidation to those who don't.

> It was nice of IBM to base SNA on a platform that is so true to life and familiar.
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VTAM gets the ball rolling in the session establishment procedure by activating the secondary logical unit with an activate physical request. A positive response from the controller tells VTAM to proceed further with establishing the session. VTAM then sends an activate logical request.

At that point, if everything looks good to the application, it sends a bind request to the terminal. After the exchange of data, the application sends an unbind request to the terminal to deactivate or terminate the session. Sometimes both a deactivate logical and deactivate physical request follow.

Now that's enough technology lingo. Let's compare the preceding scenario with human relations, specifically the process of initiating a conversation.

The activate physical request can be compared with getting someone's attention when starting a conversation. The activate logical request simply involves mental imaging of what to talk about. The etiquette of the conversation, who talks first and how long, is analogous to the bind request. The exchange of ideas comes next. The unbind request in a conversation is the agreement to end the discussion. Finally, there's a move to deactivate logical and physical links to cause a complete termination of the conversation.

This comparison proves two important things. First, computer architects are human and they base their development on a known resource: themselves and their relationships to others.

Second, and probably more important to many of us who feel inferior to computer geniuses, we now realize that computer architects are not so smart. We could have done the same thing because we are just as human as they are. It may have been unintentional, but it was nice of IBM to base SNA on a platform that is so true to life and familiar.

So the next time a computer-literate snob throws an acronym at you, just smile and say, "I know what that means, and it's nothing more than a facsimile of life." He will then probably walk away, scratching his head in bewilderment.

Now let's talk about LU 6.2, where the relationship between the primary logical unit and secondary logical unit takes a strange twist.

No, on second thought, you should probably take some time to assimilate all of this human relations information. We should leave the really spicy topics for later.

Anderson is a senior network analyst with The Toro Co. in Minneapolis.

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An IDG Communications Publication

EDITORIAL

Controls needed on business use of research networks

A famous case of congressional impropriety occurred years ago when a congressman allowed local businesses to include advertising in the government-paid mail he sent home from Washington, D.C.

Something similar could be looming right now — the misuse of government-funded research packet networks by businesses — and it would be wise to thwart such an act long before it occurs.

Clearly, research networks must avoid even the appearance of impropriety if the legislature is ever to vote in favor of additional major funding for networking research on the 1G bit/sec network currently proposed in Congress.

Recently, several companies have been established to enable businesses to use regional research networks to access the Advanced Research Projects Agency Network's successor, Internet, which now links some 5,000 networks and 300,000 computers.

Earlier this year, a nonprofit company, Advanced Network and Services, Inc. (ANS), was set up to help develop the National Science Foundation Network (NSFNET). One of ANS' goals is to encourage business use of NSFNET's soon to be completed 45M bit/sec backbone.

Most of ANS' funds come from its two major backers: MCI Communications Corp. and IBM, whose donations to NSFNET greatly exceed the contributions of the government.

Still, there is potential for network abuse. Although only research laboratories are allowed to use the NSFNET backbone, no measures have been implemented to block two or more commercial labs of a single manufacturer from using the network to communicate product information.

According to ANS President Allan Weis, filters could be devised to prevent commercial use of the NSFNET backbone but they have not been implemented. ANS advises companies not to misuse the network, but there are no measures to prevent them from doing so.

If laboratories use the research network to transmit commercial data such as for computer-aided design and manufacturing or to back up local processors, then they would be using the government-subsidized network for commercial purposes — and in a way that most taxpayers would consider improper.

Soon the question of providing serious funding for the proposed super fast wide-area research network will arise.

With money being tight, it's not likely the measure will pass. But this much is certain: The funds will never be granted if Congress and taxpayers think the government is just funding a commercial communications enterprise.

OPINIONS

TELECOMMUNICATIONS TECHNOLOGY

BY JAMES KOBIELUS

Too much technology can lead to electronic alienation

Industry propaganda holds that networks shrink the world and bring people closer together. That's correct to a point. Networks overcome barriers of geography, time, organization and function. Marshall McLuhan's "global village" is the most famous expression of this idea.

However, networks may also increase the distance between people, in emotional and practical terms. We can use telecommunications to make ourselves less available to one another. Technology provides us with plenty of ways to conceal ourselves and avoid unwanted interactions.

Telecommunications is a social barrier as much as a bridge. No telephone, electronic mail or videoconferencing system can match the intimacy and flexibility of face-to-face interaction.

Work is much more than just information sharing; it's a social setting in which the physical presence of individuals makes a difference. When our only interpersonal contact is electronic, it's too easy to regard one another as remote abstractions.

Telecommuting eliminates distance as a factor in the work but not in the workplace. People who telecommute usually take themselves out of the running for promotion and advancement in their companies. Status and recognition in most workplaces are very much tied to physical presence and daily interaction. Telecommuting brings new meaning to the old saw, "Out of sight, out of mind."

Telephony can be an impersonal, distancing medium. There's something gauche about using the phone or sending an E-mail message when personal interaction is just as easy.

Some people deliberately use the telephone to avoid dealing with others in person. The reason may be shyness or arrogance. One manager I knew used the phone to scold her staff without having to look them in the eye. None of the unfortunates sat more than 50 feet from her, but she was like the Wizard of Oz, chastising the little people from behind an electronic curtain.

Obscene phone callers also take advantage of this electronic curtain. For better or worse, traditional phone service — in other words, without calling-party identification — safeguards the anonymity of callers who wish to maintain it.

Of course, we all need to put a little distance between ourselves and others now and then, for perfectly legitimate reasons. Telecommunications gives people too many ways to butt into our lives, such as beeping us at home or calling us in our cars.

> Each of us projects an image — closeness or distance — by the way we use media.
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> ▲▲▲

Store-and-forward messaging systems, such as voice and E-mail, give us back some control over our schedules. They let us field calls and postpone interaction to more convenient times.

Store-and-forward technologies can facilitate or obstruct personal interaction, depending on how they're used. Under the best case scenario, people use their voice or electronic mailbox as a central depository to ensure that no incoming messages get lost or overlooked.

The worst case scenario is when people use their mailboxes to screen incoming messages or simply fail to respond promptly. These are the hypocrites whose recorded announcements promise, "I will return your call as soon as I get back."

Computer-based messaging systems make it easy — perhaps too easy — for correspondents to cross the line from social distance to intimacy.

Some E-mail users drop their inhibitions and say things they shouldn't have said to the wrong people, such as their bosses. E-mail radically expands the number of people with whom we can conveniently interact, lulling us into a false sense of intimacy. This can be especially dangerous for those of us who work in hierarchical organizations, which are built on elaborate mechanisms for maintaining social distance.

Ironically, too much on-line interaction can leave us feeling walled off from our fellow human beings. E-mail systems can bombard us with more messages from more people than we're able to manage effectively. One starts to feel a bit harassed by the glut of communications — sort of a high-tech analogy to the urban phenomenon of "the lonely crowd." It's a subspecies of information overload that one might term "electronic alienation."

The antidote for alienation is intimacy. Each of us projects an image — closeness or distance — by the way we use different media. Some people take right away to the telephone or E-mail. They use these channels to open up and reach out to people. These are the folks who will embrace multimedia communications and use it to its potential.

Others will use new media to rebuild the same old walls against meaningful interaction. In the on-line world, intimacy is established by people who use media to express their humanity, not just to convey information or the sounds of their voices.

Telecommunications technologies shrink the world when people use them as a means of conveying their presence across time and space. No amount of technology will unite people who want to stay at arm's length.

Kobielus, a contributing editor to Network World, *is a telecommunications analyst with Network Management, Inc., a Fairfax, Va.-based consulting firm.*

TELETOONS

BY FRANK AND TROISE

LETTERS

RAM data inconsistencies

After reviewing the feature article in your Oct. 1 issue ("Interoperability is key to LAN operating systems"), I have decided that the information contained within it was not well-edited. In particular, the column that specifies the "Minimum workstation RAM (bytes)" is useless. It appears that the vendors interpreted the question differently.

Some vendors, for example, interpreted the question to mean, "How much random access memory does my network software consume?" Artisoft, Inc. claims it consumes only 12K bytes of memory.

Other vendors interpreted the question to mean,"How much RAM needs to be in the personal computer in order for the personal computer to perform typical DOS functions and run the network software?" Digital Equipment Corp., IBM and others claim they need 640K bytes.

In DOS personal computers, the most precious resource is RAM, and when evaluating software and networking packages, users give serious consideration to RAM consumption. How can professionals give any credibility to publications such as *Network World* when the information is not checked for consistency?

Jim Roberts
Lederle Laboratories
Pearl River, N.Y.

Author's response:

All of the Buyer's Guide chart information was thoroughly checked and, in response to this letter, checked again. I stand by all information in the article and in the tables with the exception of the entry Artisoft, Inc. provided. Although we called and pressed for a response comparable to other listings, Artisoft refused to provide a

(continued on page 59)

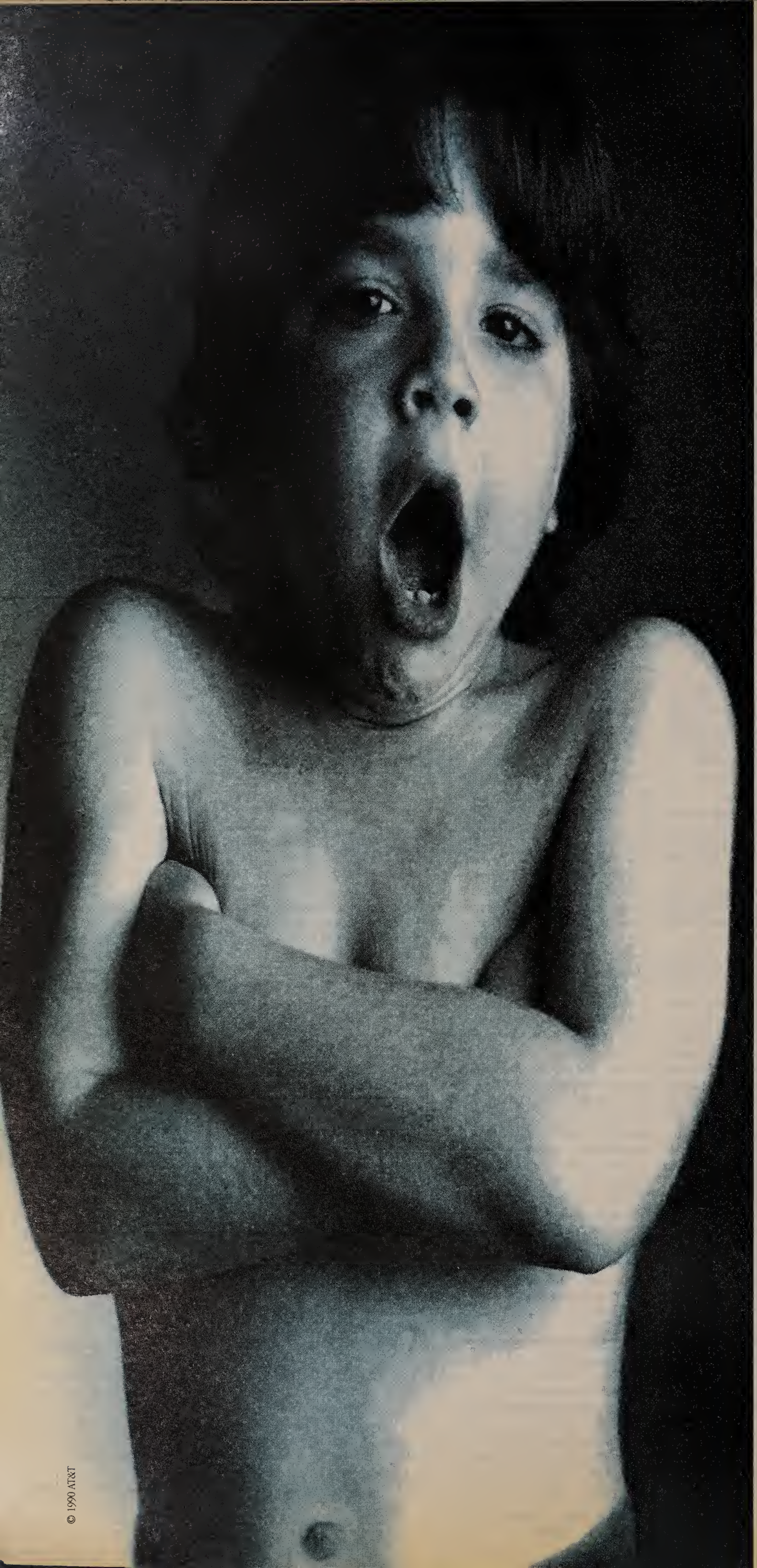
Network World *welcomes letters from its readers.*

Letters should be typed and double-spaced. Send to Editor, Network World, *161 Worcester Road, Framingham, Mass. 01701.*

Letters may be edited for space and clarity.

LIKE ALLIGATORS IN A SWAMP, unforeseen problems can really put the bite on a communications operation. Many managers find themselves wrestling with these networking reptiles every day.

If you've survived an "alligator attack," share it with our readers by calling Susan Collins, assistant features editor, at (508) 820-7413 or fax your idea to us at (508) 820-3467. Alligators should be 1,200 words in length and submitted either on disk or via modem.



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Trends and TECHNOLOGIES RESHAPING networks: WWW

Shortage of skilled personnel

Desperately seeking skilled staff

Outsourcing, centralizing and adding intelligent software help managers cope when humans can't be found.

CONTINUED FROM PAGE 1

pert systems.

How difficult is it to find skilled staff? "It's a growing challenge to find skilled workers," says Len Evenchik, director of communications for the Commonwealth of Massachusetts.

"It's becoming harder for companies to find skilled people to manage their networks," says Paul Datoli, vice-president of NetVision, Inc., a systems integrator based in Burlington, Mass.

Both users and vendors have noted the dearth of skilled networking staff. "We are just beginning to feel the shortage," says Judy Myers, assistant vice-president of human resources and organizational development at Indiana Bell Telephone Co.

Earlier this year, *Network World* conducted telephone interviews with 100 network managers in an effort to identify the most pressing issues facing them. Worker shortages was consistently high on their lists. More than 50% of the surveyed network managers reported difficulty finding qualified staff to handle network management duties.

Network managers expressed particular concern about finding skilled personnel for data networks; 48% of the respondents found difficulty getting qualified personnel to work in data communications. Also, 31% said they had trouble finding staffers skilled in voice communications. Finally, 27% of the surveyed managers said they worried about staff shortages for international networks.

Apparently, no earlier figures exist with which to compare these findings. However, the consensus of users interviewed came to the conclusion that current shortages far exceed those of a year ago.

One of the most popular methods used to reduce the need for networking special-

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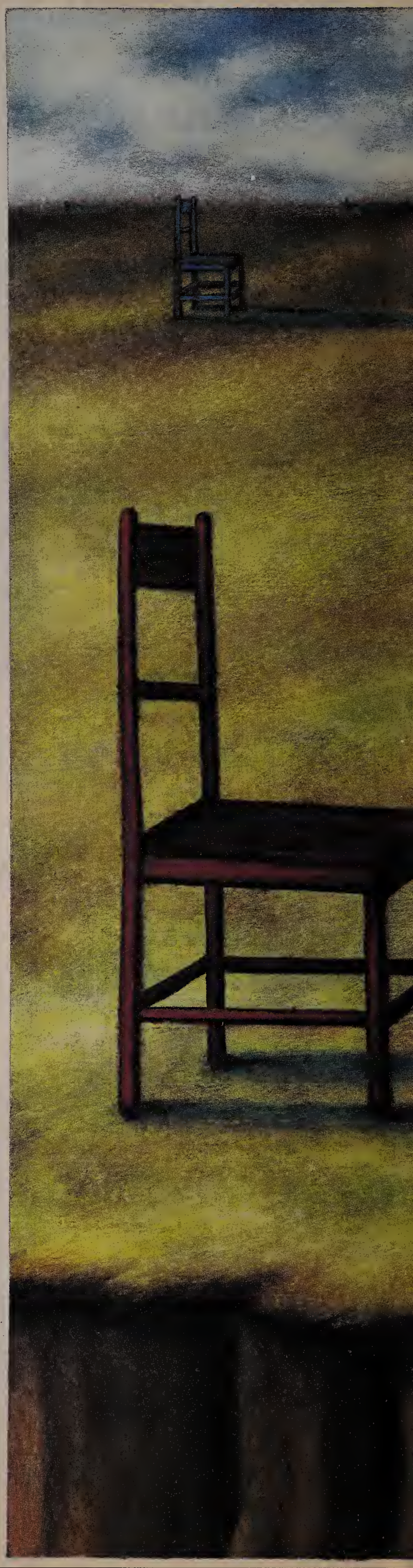


Gebert

(continued from page 38)
ists is to hire nonspecialists to solve minor problems. This is one reason for the rising popularity of network help desks.

Hand in hand with improved help desk facilities is a trend toward more centralized management of networks. Centralized management is considered a more efficient way to use staff. It has also led to an increase in the use of remote network management tools.

Help desk trends

Staffing shortages have both increased the need for help desks and led to changes in the way they work. Help desks certainly need technically skilled staffers — and they aren't easy to get. Therefore, to improve the efficiency of the workers that are available, companies are installing expert systems and interactive voice response systems.

Expert systems prompt the help desk operator by suggesting questions to ask when troubleshooting a problem. This makes calls shorter, freeing workers to handle more calls. In addition, the prompting provides companies with a way to use less technically skilled people in some help desk applications, saving the highly skilled staffers for the most difficult problems as they arise.

One example of this type of product is the Helpdesk Expert Automation Tool (HEAT). A software package that helps automate help desks, HEAT was designed by a consortium of 28 companies including National Semiconductor Corp., New York Life Insurance Co. and Texaco, Inc. The software, developed for the consortium by Bendata Management Systems, Inc. of Colorado Springs, reduces the time spent diagnosing problems and training help desk workers.

A network manager at System One Corp., one of the companies that beta-tested HEAT, says that the time spent training help desk personnel could be reduced from the current six months to six weeks by using HEAT.

Data base assistance

Relational data bases also improve the efficiency of help desk staff. As generally used, this data base contains information about end users, including the type of equipment they have and, in some cases, a maintenance history of that gear. Knowing what equipment is being used assists the help desk operator in solving the problem.

A fitting example is Federal Express Corp. in Memphis, Tenn. There, the average help desk call is four minutes long, says Ray Peek, senior manager of the company's network control center.

Several of the managers interviewed for this article say they would like to see automatic number identification (ANI) used with help desks to speed call processing. Network managers are also turning to interactive voice response (IVR) technology to improve help desk efficiency. Two approaches to IVR-based help desks are gaining favor.

In the first approach, callers dial in, move through a series of menus and answer questions about their problems by pushing the appropriate numbers on the telephone keypad. The types of answers they provide route the call to the help desk staff member most experienced in the area.

For example, a national catalog retailer, whose network manager requested anonymity, recently installed such a help desk in its Dallas headquarters. The help desk uses IVR technology from Natural Microsystems Corp. of Natick, Mass., and a voice response application development software package developed by Open + Voice of Plano, Texas.

Callers to the help desk enter an identification number using the keypad on a push-button phone, after which the system asks them if they need help with a hardware problem, a software problem or if they would like some prerecorded training. For each response, there are more questions.

A second approach to using IVR technology at the help desk allows callers to leave a voice mail message if the operator is not available, a feature that enables companies to stretch their limited network troubleshooting staff.

Additionally, companies using such systems find they can provide assistance 24 hours a day without increasing staff.

This year, Science Applications International Corp. (SAIC), an international technical services and systems integration company based in San Diego, installed a voice-messaging help desk based on VMX, Inc.'s VMXworks in the company's Information Help Desk in San Diego. Through this single help desk, SAIC helps solve the networking problems of several thousand employees around the world.

Centralization helps

Users that have grappled with staff shortages say many network applications don't work well without centralized net management.

"You don't need a lot of experts at each location," says Tom Viviano, product architect at Logica Data Architects, Inc., a software development company and systems integrator based in Waltham, Mass. "You don't have to have valuable resources — your skilled workers — at each of your locations."

Fixing problems in remote sites is increasingly being handled by third parties. Often, user companies will find a service provider or vendor that will maintain all of the equipment in a particular location. In this way, the company deals with a single outside firm whenever there is a failure.

A centralized staff might also be called on to do a postmortem of network failures. For example, upper management may come to the network manager and say, "I hear there was a problem six weeks ago. What happened?"

What happened was that the management center was able to solve the problem by using a remote tool. Having this capability means that repair people have to be called in — but not as frequently as they were a few years ago. Many network element management systems, for example, allow a user to diagnose a problem at a remote site. Once the problem is identified, the network element can often be reconfigured or reset remotely.

Trends in recruitment

Regardless of whether networks are centralized or decentralized, they still need qualified people to make them work. The approaches companies currently

take to find their networking staff are different than the recruitment methods used in earlier years.

Previously, many companies used recruiters to locate fitting candidates. Others relied on classified ads placed in major daily newspapers or in trade publications. Today, there is a strong belief among the staff members who recruit networking personnel that older methods are not working and that companies are excluding some of the people they really need by using these methods.

Electronic Data Systems Corp. (EDS), the Troy, Mich.-based systems integrator, for example, has an internal staff of professional recruiters. Indiana Bell's human resources department works closely with managers from the start of a project, helping them decide what skills are required for a job even before people are needed. At the University of Colorado in Boulder, talented people are sought from a large number of networking personnel recently laid off by AT&T and other large organizations in the Rocky Mountain region.

At EDS, recruiting is a very lengthy process, says Vern Olson, the company's director of staffing and manpower. It involves multiple interviews by the recruiter, followed by multiple conversations by the hiring body.

Where companies look for new networking staff is also changing. "Besides campuses, we also recruit from the military environment," Olson says. With the cutbacks in defense spending, it's a new source of technically

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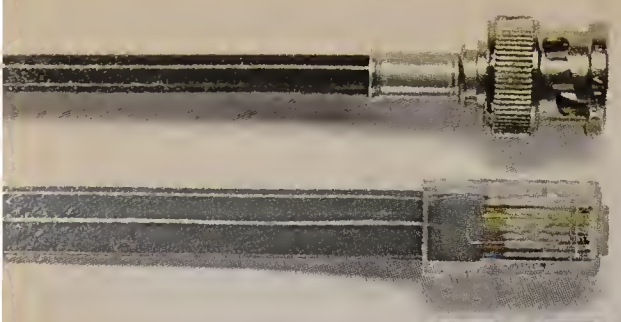

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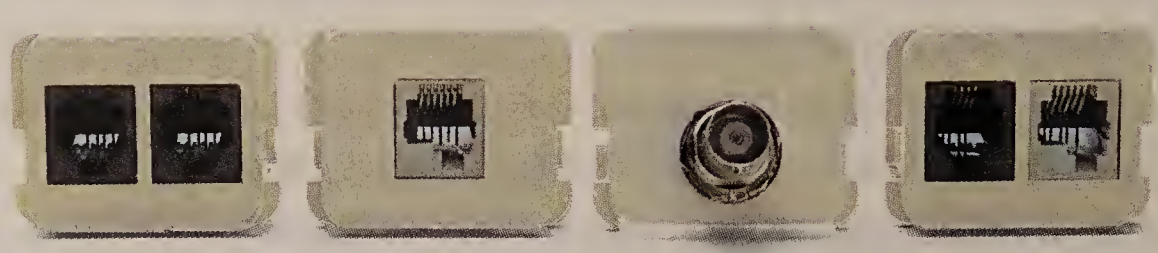

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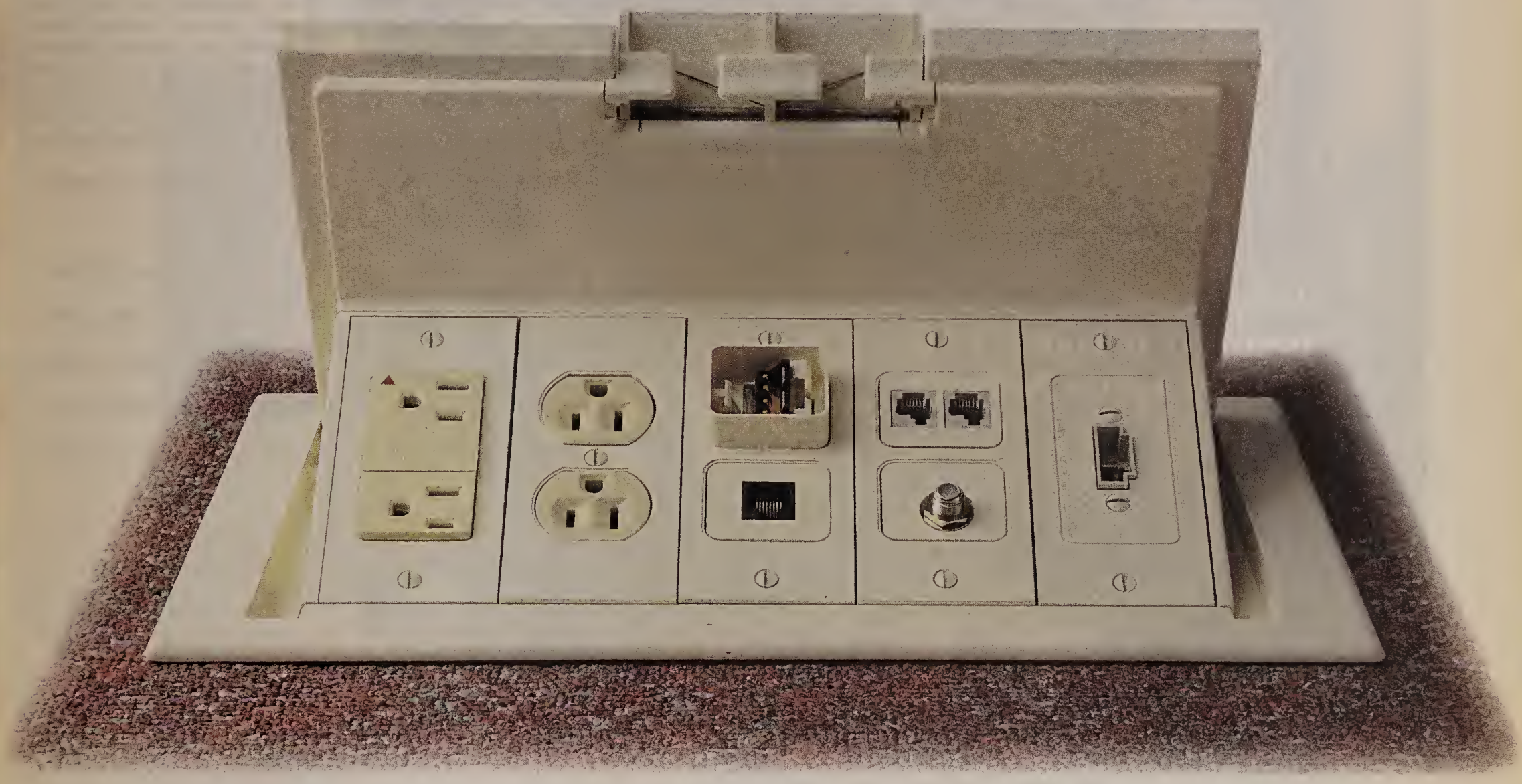

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(continued from page 41)
skilled workers that may provide relief for some companies.

Indiana Bell is seeking workers through an often overlooked source: retirees. "We've called back some people," says Indiana Bell's Myers.

Myers says that, so far, the common way of using rehired retirees is in fixed-length projects. The policy has been so successful that the company is seeking new ways to use retirees.

Training trends

Customized training programs can also help net managers find the skilled people they need to manage and work on networks.

For example, new EDS networking employees enter a two- to three-year training program that is tailored to the individual. The training includes a combination of technical training and on-the-job skills development.

"We can hire people from the accounting field that have good application knowledge and give them data processing training," Olson says. "We can also hire a networking person and train them in a specific application."

At the University of Colorado at Boulder, newly hired telecommunications staff members map out a professional development plan with their supervisor. "We grow our own," says Jeff Lipton, director of office support systems at the university. The supervisor provides a mix of training that allows the employee to get promoted from within.

Training isn't cheap. Digital Equipment Corp. recently launched an internal training program designed to turn out networking managers for its 54,000-node global corporate network.

It costs DEC about $12,000 per trainee to run this program, according to Joe Megna, DEC's manager of corporate communications planning. But, he says, "It's a long-term investment that is critical" to the company.

According to University of Colorado's Lipton, sending an employee to one AT&T training school per year costs about $3,000, including travel and other expenses.

What the future holds

More companies are turning to outsourcing to solve their skills shortage. Among companies that are currently outsourcing, 42% say that the main reason their company did so was lack of staff and scarcity of in-house expertise (see "Managers speak out on networking challenges," *NW*, May 21). The study found that 40% of network managers that do not currently outsource are considering doing so.

As worker shortages continue, network managers are trying anything — and sometimes finding new approaches — to get the work done. Technology is helping through the use of expert systems and more automated help desks. Centralized management also helps. In some cases, outsourcing and new recruitment techniques are reducing shortages.

The problem is undoubtedly solvable. Unfortunately, at the moment it is self-perpetuating. As the demand for qualified employees grows, so does the need for recruiting. But somehow the job has to be done.

Imagine this scenario. An irate branch manager has been trying for some time to contact the network control center to report a problem. Since there isn't enough staff, the manager cannot get through to make that report. It is unlikely that the branch manager will be patient enough to hear explanations of why skilled staff cannot be found. Indeed, it is unlikely the manager will care.

But somehow, the network manager must find skilled people to fill all of the empty seats or the imminent eruption by the branch manager is likely to be repeated.

As shortages continue, network managers are finding new approaches to get the work done.

▲▲▲

Token-ring design for SNA nets

Provident National Bank searched for a new network design and ended up with more than a "token" solution.

By CHARLES THOMAS

Token passing played a large role in Provident National Bank's recent network project. Provident is an affiliate of PNC Financial Corp., and PNC relies on three data centers to support its 14 banking affiliates. Provident runs PNC's Philadelphia data center, which supports a Systems Network Architecture net with several large remote locations, one of which is Concord Plaza in Newark, Del.

Concord Plaza was the primary site of several Provident affiliates, including PNC National Bank, Provident Financial Processing Corp. and Provident Institutional Management Corp. PNC National Bank's principal business is consumer lending, involving such services as credit cards, car loans and home equity lines. Provident Financial provides administrative accounting and shareholder services as well as other customized services. Provident Institutional provides advisory services to mutual funds, partnerships and corporate treasurers. The applications that support these services rely heavily on mainframe processing. Thus, an unreliable or poorly performing network has a significant impact on business.

Over time, the network at Concord Plaza had grown into a mixture of equipment with varying line speeds that supported more than 500 fixed-function terminals. This network, which had an average response time of about 2.6 seconds, was the source of many complaints from frustrated end users.

In early 1989, Provident started making plans to move to a new office building, called Bellevue, located near Bellevue Delaware State Park. Provident's communications team decided to take advantage of this move to correct

(continued on page 46)

Thomas is an assistant vice-president for Provident National Bank of Philadelphia.

(continued from page 45)
the network difficulties plaguing Concord Plaza. The team members thought a top-down design effort could solve many of their network problems.

Setting the goals

To design the new network, Provident's communications department had to juggle several elements, including:

■ **Line speed.** Because of the ad hoc growth of Concord Plaza's network, many of its communications line speeds were extremely low (9.6K bit/sec). Provident's communications team wanted to use high-speed lines such as T-1 in the new design.

■ **New technologies.** The network designers wanted to use new technologies, particularly those that reflected the continuing merging of token-ring and SNA networks. They wanted to attach token-ring LANs to their host-based network. The application of token ring to SNA is a relatively new development. Provident wanted to use token ring because token-ring interface cards for controllers and front-end processors add considerable flexibility in SNA systems planning.

■ **Line protocol.** IBM's Synchronous Data Link Control, which was being used in the net configuration, has inherent inefficiencies when used on lines with a large number of drops.

Originally designed to allow front-end processors to communicate with several controllers in different physical locations over the same line, SDLC polling increases traffic and competes with end-user traffic for bandwidth. Another SDLC problem is that controllers must wait to be polled, even if they have data to send.

One attractive solution to the limitations of SDLC is to use a technique called group polling. Instead of polling each controller separately, the front-end processor polls only the gateway. Group polling comes as an option in the 3174's software and requires standard modifications to the front-end processor.

■ **Line duplex.** Because of the limitations of the 3174, which Provident was using at the time, they couldn't use full-duplex transmission. However, several other design options did use full duplex. Full-duplex transmission clearly offers advantages over half-duplex transmission, including increased throughput.

■ **Line balancing.** When multiple lines are used to transport data to a remote location, one line can be idle while another is busy. The designers wanted an approach that would take advantage of the idle lines by balancing the load.

■ **Fault tolerance.** The designers wanted to use a system that could recover easily from an error and didn't require manual intervention when hardware components failed. They particularly wanted to protect their telecommunications circuits because the financial services business is so sensitive to downtime.

■ **Cost.** Provident requires that all equipment have a hot backup, which makes certain solutions prohibitively expensive. This policy was necessary because of the critical nature of host access in the financial industry. It doesn't cost much to duplicate controllers or personal computers, but an unused front-end processor is considerably more difficult to cost-justify.

■ **New technology risk.** Relying on technologies that have been announced but not yet released has dangers as well as rewards. Regardless of the vendor or the care the user takes in installing the equipment, the first versions of software and hardware often have bugs.

■ **Dead-end technology.** The team at Provident also wanted to avoid investing in technology that was going nowhere. Many techniques are appealing when they are first available but don't evolve with the rest of the data processing world.

With these elements in mind, Provident's communications team came up with four possible designs for the Bellevue building. They could use:

■ **Standard technology.** IBM 3174-11R controllers linked to multidrop 56K bit/sec lines with fixed-function terminals attached.

■ **Remote gateway controllers.** IBM 3174-11R gateway controllers communicating with the Philadelphia front-end processor over 56K bit/sec lines. These gateway controllers could be attached to a token-ring local-area network. The gateway controllers could communicate over the token-ring LAN to downstream 3174-13R controllers, which could be attached to the fixed-function terminals.

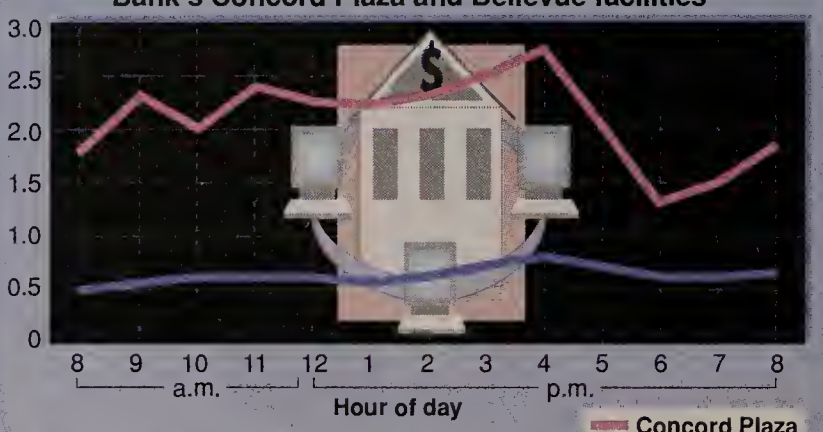
■ **A front-end processor gateway.** A remote 3720 front-end processor gateway attached to a small token-ring network. The front-end processor could be linked to the Philadelphia front-end processor at speeds up to T-1. It could communicate over the token-ring LAN to downstream 3174-13R controllers, which could be attached to the fixed-function terminals.

■ **Split bridge.** Local 3174-11L front-end processor gateways in the Philadelphia data center attached to a token-ring LAN. This ring could be bridged to another token-ring LAN at the remote site. The remote ring could contain 3174-13Rs with fixed-function terminals attached. The local gateways could communicate to the downstream controllers over the bridge. The bridge could support line speeds up to T-1.

Getting a better response

Figure 1

Comparison of network performance at Provident National Bank's Concord Plaza and Bellevue facilities



Bellevue's network design, based on remote gateway controllers attached to a token-ring LAN, reduced average response time to 0.8 seconds, compared to the Concord Plaza net's average of 2.6 seconds.

GRAPHIC BY SUSAN SLATER SOURCE: PROVIDENT NATIONAL BANK, PHILADELPHIA

Pros and cons

The standard approach had several strikes against it. For one, the line speed would be limited to 56K bit/sec, which, although much faster than the 9.6K bit/sec at Concord Plaza, is not as fast as the T-1 speed (1.544M bit/sec) the designers preferred. Using standard controllers also requires the use of SDLC polling. With the standard multidrop technique, the front-end processor can operate at full duplex, although the 3174s can communicate only in half-duplex mode.

In addition, load balancing using idle lines is impossible with the standard approach, and the standard design has no protection against line loss. Because the communications team at Provident had used the standard design so often before, they were familiar with it in terms of implementation and cost. However, they considered it to be a technology that had run its course.

Implementing the remote front-end processor gateway solution would allow the designers to use T-1 speeds. Like the standard solution, this approach also uses SDLC. However, instead of the master/slave relationship that exists between the front-end processor and controllers, a peer relationship exists between the data center's local front-end processor and the remote front-end processor. Also, the remote front-end processor gateway solution uses full-duplex lines, a mark in its favor.

With this solution, the network can take advantage of idle lines by breaking up data intended for the same destination and transporting it across separate lines. The remote front-end processor gateway approach was also the most robust in terms of fault tolerance. If more than one line is used to connect the remote front-end processor, then these lines will dynamically and transparently back up one another. The worst symptom the user experiences is an increase in response time.

As with the standard approach, however, Provident was concerned that the remote front-end processor would become a dead-end technology. During the planning phase, the only remote front-end processor that was economically feasible was the low-end IBM 3720.

Rumors abounded that IBM was not going to continue to invest in developing the 3720 line, which seemed to be confirmed by the fact that it was one of the few pieces of telecommunications equipment that had a 4M bit/sec interface card but no 16M bit/sec card.

Furthermore, Provident was told that IBM did not plan to offer a 16M bit/sec card. In fact, one independent token-ring expert said investing in the 3720 was tantamount to throwing money away. Also, the remote front-end processor gateway was by far the most expensive solution because of the previously mentioned hot backup policy.

Like the remote front-end processor gateway design, the split-bridge design allowed the network to use T-1 speeds. The split bridge also uses SDLC. Like the remote front-end processor gateway, the split-bridge approach uses full-duplex transmission. And like the standard solution, the split bridge was reasonably priced.

The split bridge offers a limited form of load balancing. With this approach, the sessions are balanced when the gateway begins communications with a downstream controller. The split-bridge technique offers only semiautomatic recovery.

Provident's tendency to shy away from new, relatively untested technology came into focus with the split-bridge approach. The split bridge, a new version of IBM's PC Bridge, was released in July 1989. Provident expected to install equipment in November and December of that year, a timetable that would have been extremely tight even without possible delays in its release.

One drawback to the remote gateway controller approach is that speed is limited to 56K bit/sec. In addition, the remote gateway controller communicates directly with the front-end processor. At the time, communications between the 3174 and the front-end processor were limited to true half duplex. However, the remote gateway controller uses the group polling technique as opposed to traditional SDLC.

Originally intended to allow a single terminal to access more than one host, multihost access, used in conjunction with the gateway controller approach, enables the gateway controllers to communicate with the same host over different lines. If one line or gateway is lost, another is still available.

In addition, using another technique called multiple logical terminals (MLT), the user can control the path to the host. MLT allows one physical terminal to represent two or more logical terminals.

The user switches between logical terminals by striking a predefined hot key. A user with multihost access that loses connectivity on one line will lose the SNA session, but with multihost access and MLT, the user can hotkey to another logical terminal and log back on.

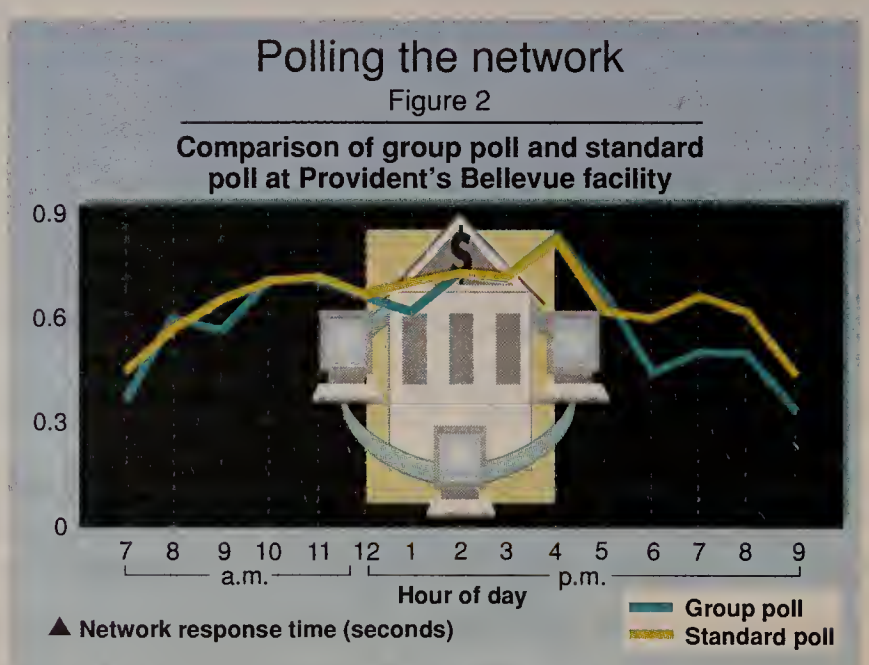
This technique also works well with the split-bridge approach if a controller is used for the local gateway.

Of all the solutions under consideration, only the remote gate-

Polling the network

Figure 2

Comparison of group poll and standard poll at Provident's Bellevue facility



With standard poll, each controller is polled separately; with group poll, only the gateway is polled. Group poll markedly improved net performance only during off-peak hours.

GRAPHIC BY SUSAN SLATER SOURCE: PROVIDENT NATIONAL BANK, PHILADELPHIA

way controller system had been around for a while and did not appear to be in danger of becoming outdated in the near future. In addition, it was moderately priced compared to the other solutions being considered.

The remote gateway controller technique did not promise the mind-boggling performance improvements hinted at by the remote front-end processor or split bridge, but it did offer some advantages. Most importantly, it offered a path for future development. Once the split-bridge technology became more readily available, it would be fairly painless to convert to it from remote gateway controllers. Also, Provident could use the controllers freed up by such a conversion as standard remote controllers elsewhere.

After considering these factors, the communications team cast its vote for the remote gateway controller approach.

Implementation

Provident installed five gateway controllers and 20 downstream controllers in December 1989 at its remote Bellevue location. Each gateway was connected to an IBM 3745 at the Philadelphia data center via a 56K bit/sec line. All 25 controllers were connected to a token-ring LAN at Bellevue. Using MLT, each terminal on the token-ring LAN can establish two VTAM sessions.

Because each department at Provident has a different peak period, the communications team had to spread departments across controllers and lines. Not only does this flatten out loads on controllers and lines, but it ensures that the loss of a single resource does not incapacitate an entire department.

A comparison between the Concord Plaza and Bellevue environments was startling. The average network response time dropped from 2.6 to 0.8 seconds (see Figure 1 on page 46). The group polling technique with the gateway controller solution was not used in the original implementation so the increase in response time could not be credited to the token-ring design. Without group polling, the remote gateway system mimics a multidrop environment exactly.

Provident expected group polling to improve network response time even further. At first, the communications team tried group polling with a single line, making it easier to compare its performance with standard polling. Surprisingly, group polling did little to improve performance.

In hindsight, the reason was obvious: Standard polling can be inefficient, and these inefficiencies are usually encountered with a large number of drops. Each drop requires a separate poll, and as the number of drops increases, more line traffic is dedicated to polling.

In Provident's Bellevue design, three factors mitigated the inefficiencies of polling: The high speed of the lines reduced the bandwidth required for polling; the number of drops was relatively small; and the lines were relatively busy, which reduces the likelihood of unproductive polling.

Figure 2 on page 46 compares group polling and standard polling at Bellevue. The average network response times are almost identical during the busy times of the day. Only during off-peak hours does group polling outperform standard polling. Both systems show a drop in network response time, but the group polling line experiences a sharper drop. During off hours, more unproductive polling occurs and group polling shows an edge.

Despite the fact that group polling did not improve performance, it did make Provident more comfortable with implementing multihost access.

Multihost access doubles the number of drops on each line. Typically, each drop is assigned to one downstream controller, and that controller is assigned 32 physical terminals and 64 logical terminals. Therefore, each drop has 64 logical units assigned to it during the process of getting the 3745 up and running. With multihost access, the downstream controllers split their 32 logical terminals between two different gateways. Each view of a downstream controller through a gateway is defined as a drop in the 3745. The result is that multihost access drops can have only 32 logical units.

Multihost access would cause the number of drops on each line to rise from four to eight. Also, the addition of a controller to a line would add two drops rather than one.

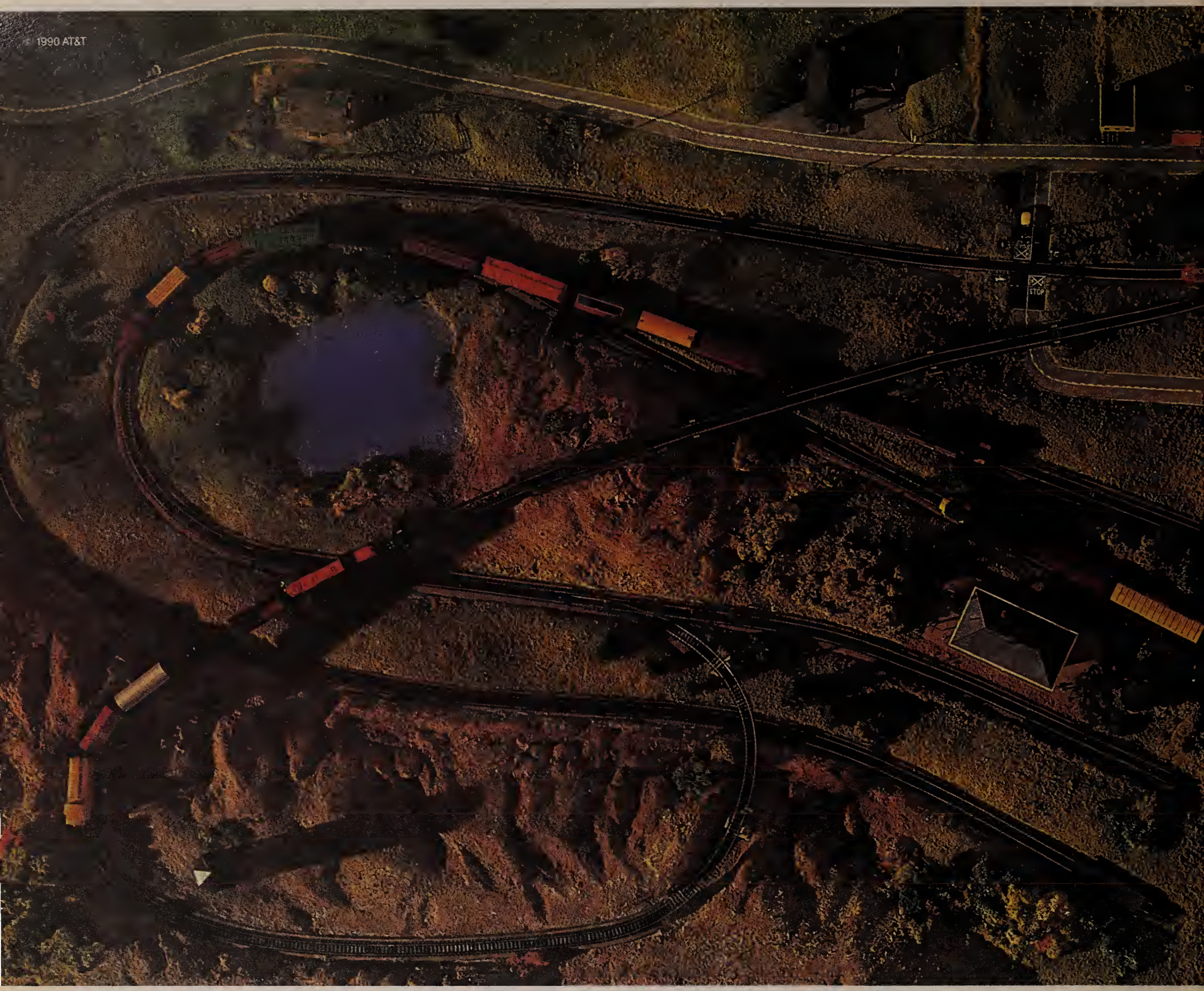
This is important in that Provident was considering adding another controller to each line to cope with growth. Four drops did not cause inefficient polling, but the communications team was initially concerned about the effect created by 10 drops on a single line.

Evaluation

If Provident's communications team were to design the Bellevue site today, it is quite likely it would select a different solution. However, the flexibility of the token-ring environment will make it easy for Provident to upgrade to another design. The token ring is already in place. Switching the downstream controllers from remote 3174 gateways to 3745s or local 3174 gateways is relatively easy. The investment in the remote 3174 gateways would not be lost because they can also function as downstream 3174s.

Provident has found that the greatest factor in improving performance is increasing line speeds. In this area, the communications team probably would have achieved the same performance with a standard design using 56K bit/sec lines.

But performance was not Provident's only goal. Using multihost access will improve line availability, and the overall network design will enable Provident to grow with technology.



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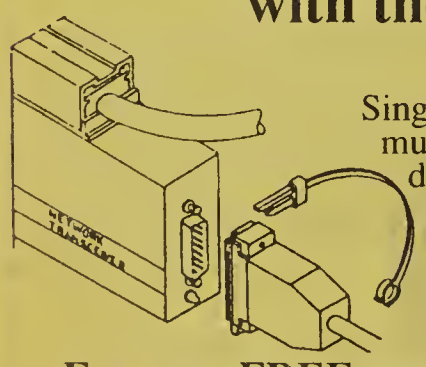

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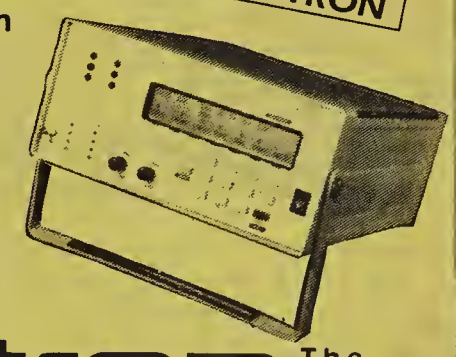

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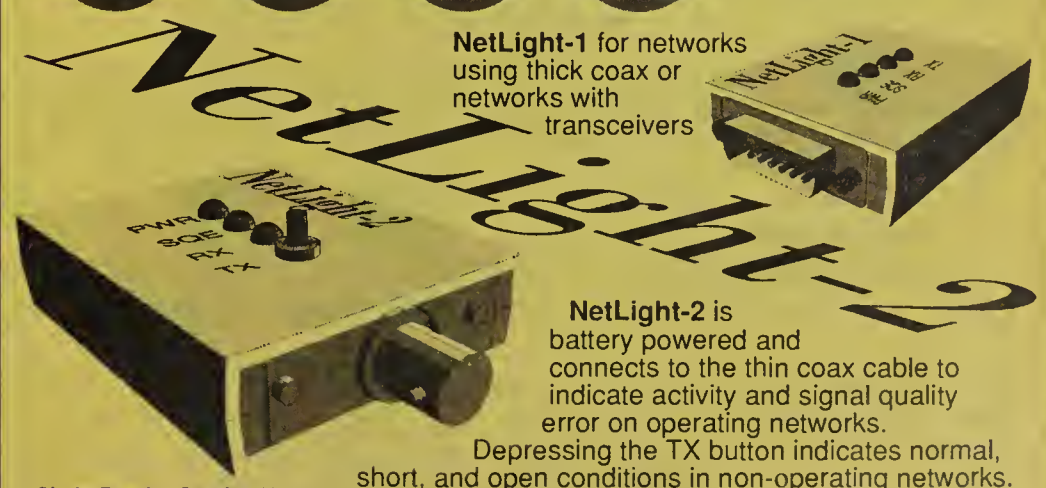

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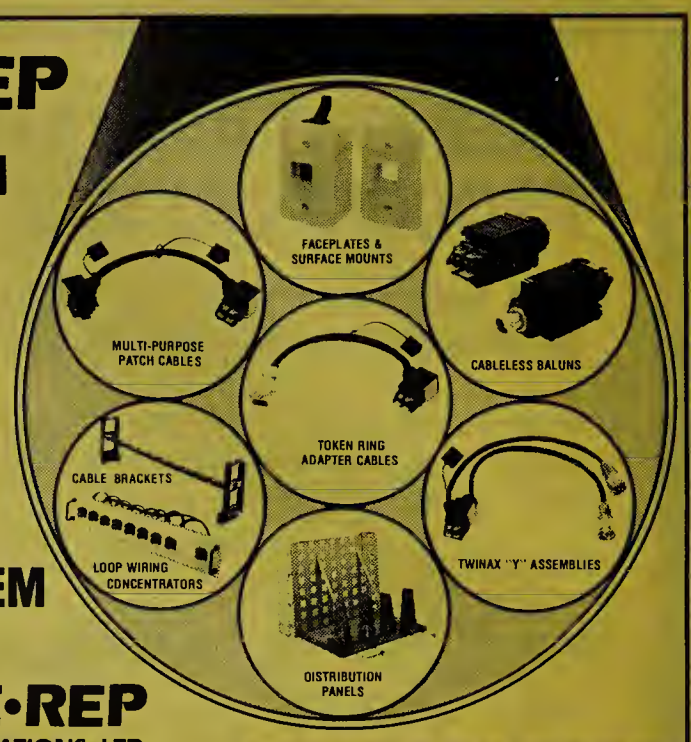

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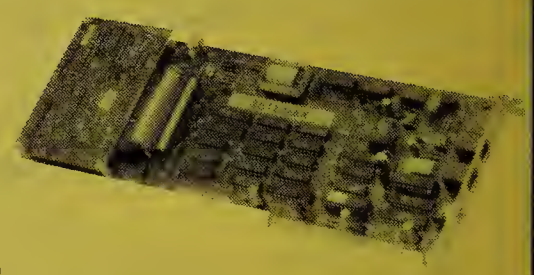

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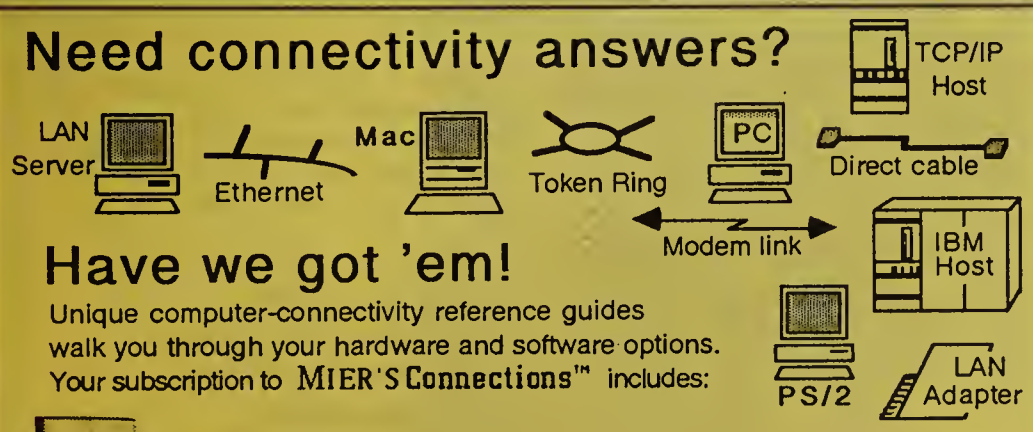

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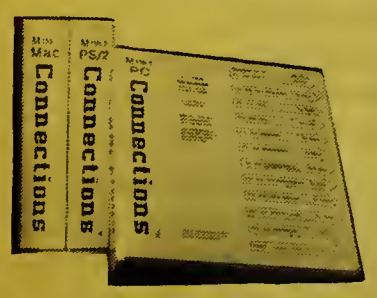

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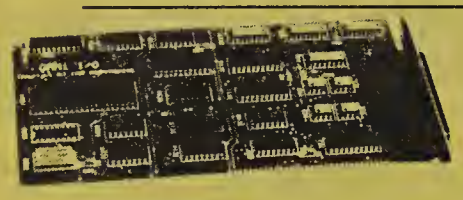

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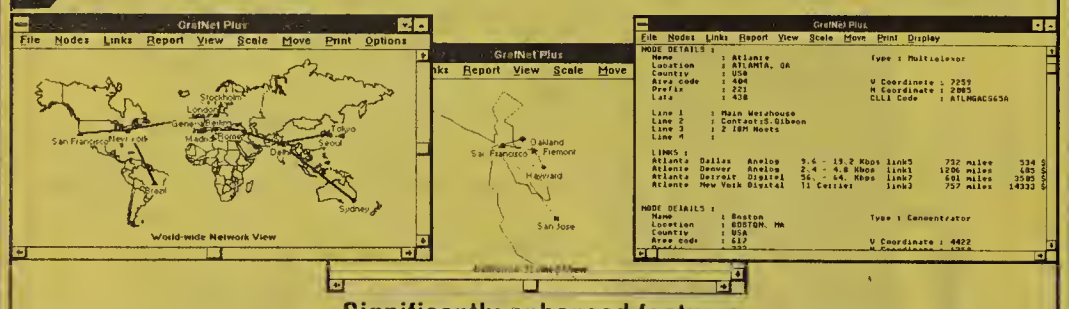

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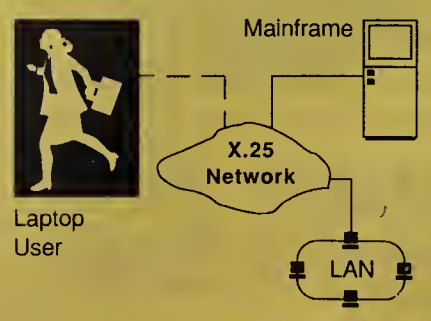

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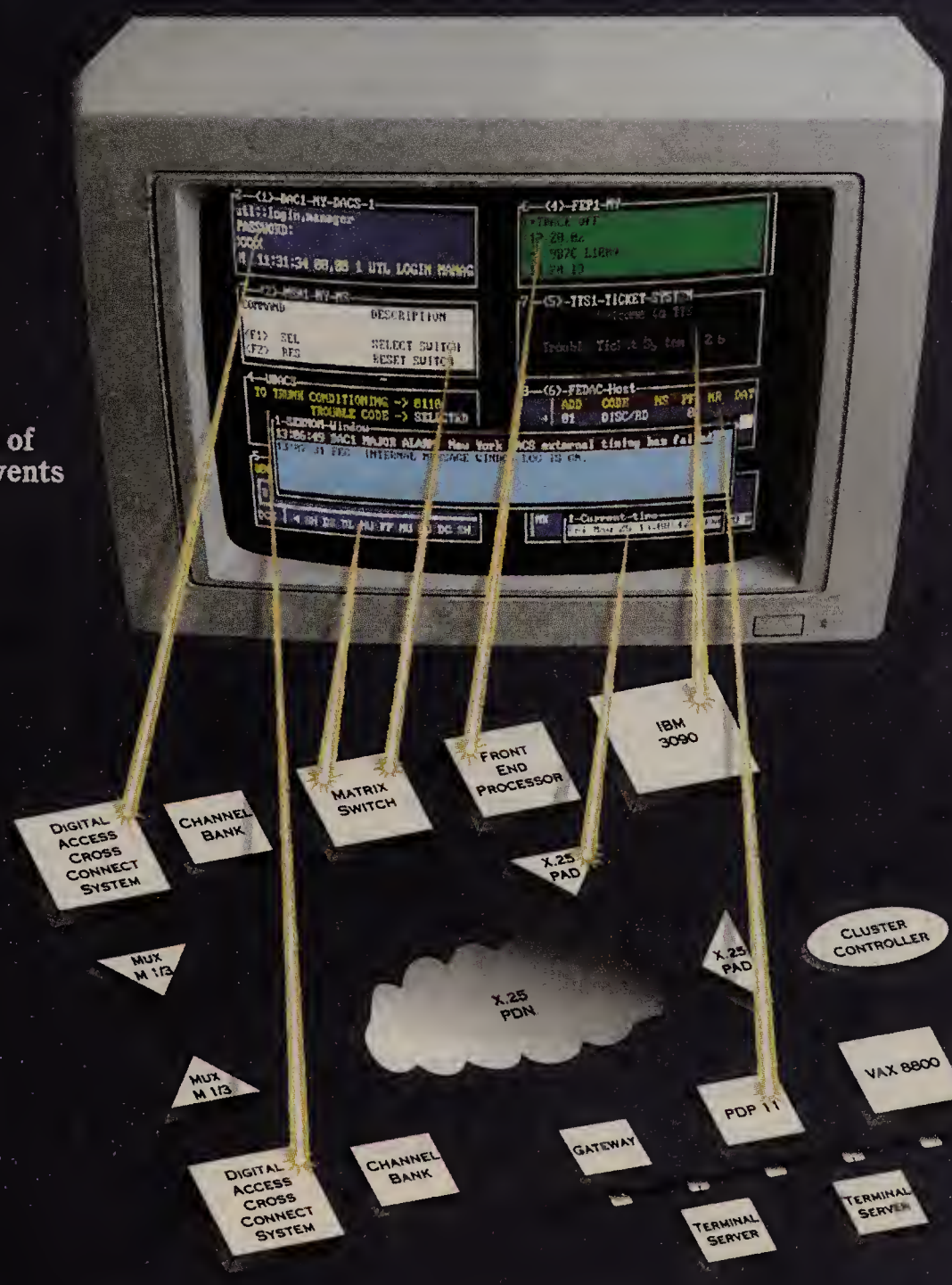

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Users paying big price for fraud

continued from page 1

member of the carrier's fraud protection team.

Snyder and three other members of the MCI team led a session on network security at the Communications Managers Association (CMA) conference here last week. The session was organized by the Wall Street Telecommunications Association.

The speakers said many companies are unaware of their vulnerability to PBX fraud and are easy targets for call-sell operators. While there are many steps companies can take to protect themselves from fraud, few do until it's too late.

"Most companies won't pay attention to the problem until they get nailed," said David Grill, manager of corporate consulting at Johnson & Johnson in New Brunswick, N.J.

What's worse is that companies must pay for fraudulent calls because they were validated and set up by corporate PBXs, not carrier switches.

The incidence of PBX fraud has increased significantly in the past two years because long-distance carriers have been clamping down on calls made with stolen calling cards, Snyder said. Carriers can now deactivate stolen calling cards within two hours, forcing call-sell operators to look for new methods.

New York is the fraud capital of the world. Snyder estimates that 70% to 80% of fraudulent calls originate here, although victims of call-sell operations are typically not in the city.

Most fraudulent calls are placed to the 809 area code, which services the Dominican Republic, Puerto Rico and the Virgin Islands, Snyder said. Some calls are made to Pakistan, and a substantial percentage of fraudulent calls are made to Colombia, probably by drug dealers who need the anonymity fraudulent phone calls provide, he said.

How they do it

The simplest form of PBX fraud involves the use of a PBX feature called Direct Inward System Access (DISA). Corporate employees use DISA to dial into the PBX — usually via an 800 number — enter an access code and get an outside line. DISA enables firms to reduce the cost of long-haul phone calls by leveraging their nationwide private nets.

Call-sell operators who find DISA codes and 800 numbers can originate calls through a company's PBX as easily as an employee, and all calls are charged to the company.

Hustlers get the codes in a number of ways. One involves "dumpster diving," or searching trash for directories, call detail reports or other documents that may contain 800 numbers and codes. They may also con employees into telling them company PBX codes over the phone by posing as system administrators.

Sophisticated call-sell operators who want to ensure they cover their tracks and make it difficult for companies to recognize that they're being defrauded use a technique called PBX looping: using one PBX to place calls out through another switch in another state.

Even the most vigilant companies may not recognize they are in the middle of a PBX loop, said Bruce Wells, senior engineer in MCI's corporate systems integrity group in Washington, D.C.

While it may be impossible to prevent phone fraud, there are many measures companies can take to deter it, Wells said. If possible, companies should eliminate the DISA option on their PBX. This closes down the easiest source of fraud.

They should also program their PBX to impose service restrictions on outbound dialing, limiting the number of users that can make overseas calls.

Wells said the best protection against fraud is to be vigilant in checking call detail records for irregular calling patterns.

Few companies currently employ a person to scan call detail records for security breaches, according to users attending the CMA show, but most said there was a definite need for such a position.

Call-sell operators "are looking for sleepy companies that won't notice if equipment is under siege," Wells said.

Users see access control problem

continued from page 4

currently are hashing out how to coordinate access among one another's directories and the directories of private companies without providing too much access, he said.

Casey is a founding member of the North American Directory Forum, a consortium of 19 messaging service providers that was formed earlier this year to work out the kinks in X.500 and speed deployment of the standard. He estimated that interconnected public and private X.500 directories will start appearing by 1992.

John Sherburne, product planning director at Sprint International, said X.500 won't be widely deployed until at least the mid-1990s and that access control is one of the issues that must be worked out before deployment.

There are multiple reasons for concern, he said. If Sprint International put employment history data in its X.500 data base, for example, the company would have to worry about headhunters accessing the directory.

Competitors might also try to access a data base of Sprint International's big customers, for example, to target them for a sales pitch. "We could see that sort of poaching," he said.

"We don't necessarily need a standard way to limit access either," Sherburne added, "as long as we can control it."

Edward Carmody, group leader for corporate E-mail services at Rohm & Haas Co. in Philadelphia, said his company has become more amenable to giving others access to its directories. But some information will still be kept off-limits, said Carmody, who oversees E-mail services for some 8,000 users at his company.

"We're heading in the direction of putting E-mail addresses on business cards and making our internal directory more accessible to our trading partners," Carmody said. "But there are places where we'll need to draw the line. For instance, only our employees would have access to a directory of our customers."

Letters

continued from page 35

minimum RAM figure other than the minimum needed to hold the basic "shell" of software. Artisoft also would not recommend minimum RAM requirements.

Steven Guengerich
Director of publishing
Business Systems Group, Inc.
Houston

E-mail privacy

I am writing in response to your editorial on electronic mail ("E-mail messages should be kept private," *NW,* Sept. 24).

Just because we are employees of a company does not mean that we are owned by it. If we are given the authority to possess E-mail accounts, we should also be given the courtesy to maintain them on our own. Notes and memos are sent daily — and probably by the minute — at my company. For management to monitor each employee with E-mail would be totally draining to the company's resources.

Employees should be given privacy rights at work just as they are at home, as citizens of the U.S. The work climate is already a tense one. I can't imagine how it would be to work daily with a fear of someone discovering that you sent a message that management may question.

Most employees work very hard for their companies and are dedicated to the work that they do. Management should show them the respect they deserve. The content of E-mail shouldn't concern management, excluding, of course, any suspected foul play.

I feel very strongly, as do my fellow employees, that our privacy needs to be protected, regardless of where it's being protected. I hope that upper management everywhere has more to do than spy on the people who help run the ship.

Author's name withheld
by request

Codex forges ahead

continued from page 1

et Assembler/Disassembler and a four-port Frame Relay V.35 Interface card. Both of the cards and the accompanying software were developed by StrataCom.

The hardware and software to support frame relay cost roughly $17,000 for existing 6290 users and $16,500 for users of the low-end 6292 multiplexer, which supports two T-1 trunks. New multiplexers with frame relay support start at $35,000.

A key to Codex's frame relay offerings, however, are the devices that feed into the 6290, said Gail Smith, principal product manager at Codex. Among those products is the new 6525 Frame Relay Software, which is a software-only upgrade that provides a frame relay interface for Codex's 6525 packet switch. The 6525 is a six- to 48-port switch with an integral PAD.

The Frame Relay Software will enable users to minimize the number of ports required to link the 6525 to a 6290 because the extra addressing bits specified in the frame relay standard allow a single link between the devices to support 32 logical connections.

Frame relay also reduces network delay because there is less protocol overhead compared with X.25, Smith said.

The software upgrade will be offered free of charge to existing 6525 users and will be a standard feature on new 6525s.

Rosemary Cochran, a principal at Vertical Systems Group, a consultancy in Dedham, Mass., said the Codex announcement was positive in terms of the range of products and the net management support provided by Codex's 9800 Series Network Management System. But she and other analysts pointed out a missing element.

"One of the things they didn't announce was the integration of their [EtherSpan] Ethernet bridge," said Larry Cynar, an analyst at Dataquest, Inc., a consultancy in San Jose, Calif. "If they bring the LAN stuff into this, this could be one hell of a robust networking product family."

Codex did provide support for some terminal equipment with the introduction of its 6507 multiprotocol PAD, which lets users link devices based on asynchronous, Synchronous Data Link Control or X.25 protocols to a frame relay network. The product comes in six-, 12-, 18- and 24-port configurations, supports port speeds up to 80K bit/sec and has a PAD performance of 50 to 100 packet/sec.

Pricing for the product starts at $1,500.

Motorola has been testing an alpha version of the frame relay interface for the 6290 with a cisco Systems bridge/router, according to William DeVor, director of telecommunications architecture and planning for Motorola.

"We like what we've seen in the alpha code we got from both cisco and StrataCom," DeVor said. "It played together the first time it was turned on."

At each of about 175 facilities in the U.S., Motorola has multiple LANs linked via routers to its 6290-based backbone, he said. When frame relay is fully implemented, DeVor expects "in excess of a 50% improvement in bandwidth availability on the existing network."

He credits that improvement to the way frame relay makes better use of backbone bandwidth by giving applications access to bandwidth only when they need it rather than dedicating a fixed amount of bandwidth to each application at all times.

DeVor said Motorola is trying to encourage other vendors that provide equipment for its network, including IBM and Digital Equipment Corp., to join in the company's frame relay tests. DEC has already announced its support for frame relay, and IBM has expressed interest in the technology, he said.

Survey details shortcomings

continued from page 19

sponses suggest that SNMP will be in use for the next several years. SNMP will endure despite the fact that many users eventually plan to migrate to the evolving ISO Common Management Information Protocol (CMIP) for managing Open Systems Interconnection networks.

For example, 71% said that for the next three to five years, SNMP will be "the dominant open net management protocol before OSI/CMIP becomes widespread."

More than half (53%) said they plan to invest in or maintain their existing SNMP products for the next three to five years before migrating to CMIP or CMIP over TCP/IP (CMOT).

Another 13% said they'd wait six to 10 years. Only 3% said they will migrate in the next one to two years, while 30% said they have no plans to migrate to CMIP or CMOT.

The survey also queried users about CMIP and CMOT drawbacks. The most serious limitation, according to 65% of the users, is "the slowness of OSI committees." Another 29% said the overhead incurred by CMIP is a serious limitation.

EMA urges users to adopt policy

continued from page 2

Cutler & Pickering in Washington, D.C., the paper titled "Formulating a Company Policy on Access to and Use and Disclosure of Electronic Mail on Company Computer Systems" was issued at the EMA-sponsored Electronic Messaging '90 conference here.

"I hope this paper serves as a wake-up call to many of the corporations that do not have privacy policies," said Chuck Noble, program manager of network external access security at Digital Equipment Corp. in Concord, Mass. "It asks companies to ask and answer some hard questions."

Noble, a member of the EMA's Privacy and Security Committee, said the EMA hopes members will present the white paper to upper management at their companies. Devising a corporate privacy policy will go beyond the jurisdiction of net managers to include upper management and personnel departments, he said.

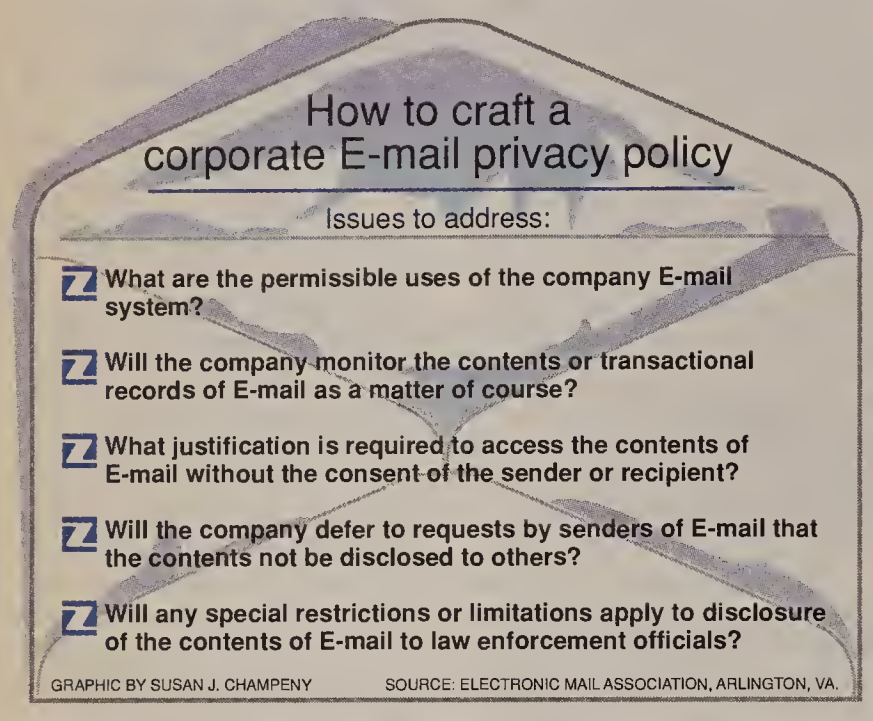
The report outlines issues that companies need to address in devising a privacy policy. These issues include defining the permissible uses of company E-mail systems and the grounds on which the company will be able to access messages without a sender's consent.

Many network managers here said their companies are in the midst of formulating or rethinking corporate privacy guidelines to take E-mail into account. Awareness of the issue has grown, they said, largely as a result of a class-action lawsuit filed this summer against Epson America, Inc. Alana Shoars, a former Epson E-mail coordinator, filed the suit, charging that Epson invaded employees' privacy by reading E-mail without prior consent.

"The Epson incident raised concerns about E-mail privacy for me," said Edward Carmody, group leader for corporate E-mail services at Rohm & Haas Co. in Philadelphia. "Developing a privacy policy for E-mail will be a real balancing act. At our company, we view E-mail as the property of the individual, but I can see instances where there would be a need to look at other peoples' E-mail."

EMA Executive Director Michael Cavanagh said the white paper was commissioned as a result of increased interest in privacy issues but not directly as a response to the Epson case.

"The EMA wants to take a leadership role on this issue," Cavanagh said.



Parallan unveils hyperservers

continued from page 4

Manager to take advantage of a server's parallel processing capabilities. That software, which has been offered to LAN Manager OEMs, is bundled with the Server 290.

Server 290 can support any version of OS/2 LAN Manager as well as all IBM protocols, including Systems Network Architecture/Synchronous Data Link Control. It can support as many as 500 workstations.

Fault tolerance is a key advantage over products such as Compaq Computer Corp.'s SystemPro, according to Michael Heylin, analyst at Creative Strategies Research International in Santa Clara, Calif. "Servers have become critical to work going on within the departments or the organizations they serve," Heylin said. "It becomes expensive when the system is unavailable."

Compaq and Novell, Inc., however, announced in February an agreement to develop mirrored Compaq servers running Novell's System Fault Tolerance products.

Parallan has not conducted any performance tests to compare the Server 290 with Compaq or NetFRAME Systems, Inc. servers.

Cooperative Solutions, Inc., a start-up software vendor in San Jose, Calif., is beta-testing Server 290 to develop software for OLTP applications. Dennis McEvoy, president and chief executive officer of the company, said he's been impressed with the performance of the server.

McEvoy said his firm also uses 80386-based Compaq SystemPros but does not have an 80486-based Compaq server to conduct a performance analysis.

Server 290 is offered in four versions. The low-end Model 10 is equipped with a single 80486, an eight-slot MCA bus, 676M bytes of SCSI storage, 8M bytes of main memory and MASS software. It costs $50,000.

The high-end Model 60 has two 80486s, two MCA buses with a total of 12 expansion slots, two dual-channel SCSI controllers supporting 19G bytes, 32M bytes of system memory and MASS software. It costs $250,000. The servers are available now.

The product will be marketed through a direct sales force and a select group of systems integrators including Electronic Data Systems Corp.

This strategy could help Parallan compete with another start-up superserver vendor, NetFRAME, which markets its products through Businessland, Inc. and roughly 50 value-added resellers in the U.S.

"Parallan has a much more realistic point of view than NetFRAME did," Heylin said. "They are focusing marketing and sales very tightly and establishing very few but large alternative channels."

The Parallan approach, however, puts the company in direct competition with more established vendors, according to Enzo Torresi, president of NetFRAME in Milpitas, Calif. "Selling directly into the IBM market makes you vulnerable on both the product and the support and service sides," he said.

Parallan struck a service agreement with Intel under which the chip maker will provide hardware maintenance, guaranteeing four-hour response time for users within a 50-mile radius of the 52 largest U.S. cities. "That's quite a commitment," Heylin said. "That's the kind of commitment the customer set they're targeting expects."

LAN backbone designs simplify

continued from page 1

ly within a data center and support all bridges, routers and even servers. Inverted backbones take that a step further by connecting all of the subnets to a single bridge/router so the backplane of that device in effect becomes the backbone.

Pittsburgh's Carnegie-Mellon University (CMU), for example, has turned a cisco Systems, Inc. AGS bridge/router into a 530M bit/sec campus backbone, according to John Leong, director of networking and communications at CMU.

CMU has an Ethernet, token-ring and Apple Computer, Inc. AppleTalk LAN in each of about 50 buildings. Originally, the university used routers or bridges in each building to link the LANs to a campuswide Ethernet backbone. Thus, whenever a bridge or router needed to be repaired, a technician had to be dispatched.

"Inevitably, once technicians go outside, they take a lot of time, they don't have the right tools, they scratch their head a little bit, they come back and they've blown a day," Leong said.

To remedy that problem, CMU two years ago turned its network inside out by bringing the routers and bridges into the data center and extending each remote network back to the center using fiber-optic cable.

The routers and bridges in the data center were then connected to a SynOptics Communications, Inc. LattisNet concentrator, which Leong called an Ethernet in a box. The concentrator, with its 10M bit/sec backplane, became the campus backbone tying together remote subnets.

Realizing that the backplane of the concentrator dictated the speed of the campus backbone, CMU searched for a product that could provide higher performance and would also incorporate a routing function. It found those features in cisco Systems' AGS bridge/router, which has a 530M bit/sec backplane.

"Essentially, what we did was take an off-the-shelf product that was selling for a totally different application and use it for our purpose," Leong said. "We made it into a half-gigabit backbone. In my opinion, it is the fastest, most affordable backbone in the world."

Today, about 15 fiber cables fan out of the AGS into a second tier of bridges and routers, all located in the CMU data center. From those devices, about 80 fiber cables run throughout the campus, either directly from the data center or via a concentrator hub located in another section of the campus.

The 530M bit/sec backbone can easily support the bandwidth-intensive applications that used to create problems for the Ethernet backbone. "All we needed was two people running [applications] at 5M bit/sec for an hour at a time and that Ethernet backbone was gone," Leong said. "That would be totally antisocial. Now, no problem. We can fix them up."

Leong said the configuration would not be suitable for all types of nets, such as very large campuses where it would be difficult to extend fiber to remote sites.

"This kind of configuration is very suitable for a small campus or a company that uses a compact site, like some Wall Street firms," he said.

Ken Starkey, associate director of communications at Bear Stearns Co., Inc., a New York brokerage and investment firm, offers proof of Leong's assessment.

Bear Stearns uses a Wellfleet Communications, Inc. bridge/router in much the same way as CMU uses the cisco Systems device. The Wellfleet box interconnects 11 Ethernet-based Novell, Inc. NetWare LANs located in a single building, Starkey said.

His company originally installed the Wellfleet equipment to cure a broadcast problem with the NetWare LANs in which packets without valid addresses were chewing up network bandwidth. The filtering capability of the Wellfleet Concentrator Node bridge/router now lets the firm isolate such problems to a single Ethernet segment, Starkey said.

It provides an added benefit in that the Concentrator Node, with its 320M bit/sec backplane, has become a high-speed LAN backbone and made managing the net easier.

Each Ethernet subnetwork in the building is linked to a LattisNet concentrator, and other Ethernet segments link the concentrators to the bridge/router in the basement of the building. "If your routing equipment is in one location, it makes it more accessible and reduces your mean time for repairs," Starkey said.

But there are risks associated with the inverted backbone strategy, the most obvious being that if the bridge/router fails, the subnets can't communicate with one another. Starkey said that problem is minimized by the inherent redundancy features of his bridge/router. The more likely scenario is a card failure, which will only affect one LAN segment and can be fixed quickly by replacing it with a spare.

Collapsed backbone

Such maintenance efficiencies can also be achieved by building a collapsed backbone, which is what Brigham and Women's Hospital in Boston is doing, said Robert Beckley, director of technology planning for the hospital.

Brigham and Women's is installing a 16M bit/sec token-ring backbone in its data center to support LAN servers and bridges. Fiber will run out to some 50 token-ring LANs, the farthest of which will be about 3,000 feet away, Beckley said.

"The idea is that anything that fails is in the computer room, and you can man that 24 hours a day," he said. "If anything breaks, it's 50 feet away and we have a good one sitting on the shelf."

If the bridges were to be deployed out in the field along with the remote LANs, the hospital would have to install dual token-ring backbones with two bridges for each remote LAN in order to ensure the devices remain operational.

"It's a cheaper way of having high availability than [installing] redundant hardware," Beckley said.

Small software firm wages war

continued from page 2

only available leverage his firm had against Revlon. His company has been embroiled in a bitter contract dispute with Revlon over payments for an inventory package Revlon has been using for several months.

"The dilemma I was faced with, as the president of a small company, was how to extract payment from a corporate giant like Revlon, who was wrongfully using our software by refusing to pay amounts that are rightfully owed," Gallagher said. "We felt we had no other recourse after Revlon accepted delivery of the system, used it on a full-time basis and then turned around and told us they wouldn't pay for it."

Gallagher described the termination as a "repossession of Logisticon's software" and denied allegations that his company placed a virus in the system that destroyed other Revlon data.

Revlon, the nation's largest manufacturer of mass-market cosmetics, hired Logisticon last year to develop inventory control software for the Phoenix and Edison warehouses.

Revlon's Conroy said his company, dissatisfied with the software's performance and Logisticon's service, withheld $180,000 owed to Logisticon under a two-phase $1.2 million contract. He said Revlon had complained to Logisticon for months that the software wasn't accurately generating sales receipts or properly updating inventory records.

The company informed Logisticon on Oct. 9 that it would cancel the remainder of the contract and withhold the $180,000 payment until bugs in the software were ironed out.

Gallagher said Revlon also demanded as a condition for payment of the $180,000 that Logisticon provide source code for the software. He said the code would have allowed Revlon to duplicate the software, which normally sells for millions of dollars.

He added that the bugs were minor and didn't hamper operation of the system.

Gallagher said his company responded a few days later by tapping into computers in Revlon warehouses "in such a way as to render the total system inoperable" without harming Revlon's data. He declined to detail the methods his company used to impair the system.

Revlon was not able to resume operations until Logisticon, under pressure, got the software running three days later.

"What [Logisticon] did wasn't a remedy available to them legally," Conroy said. "Their recourse would have been to sue for an alleged breach of contract and let the courts decide. But instead, they used their familiarity with Revlon's computer system to sabotage the company's proprietary data base."

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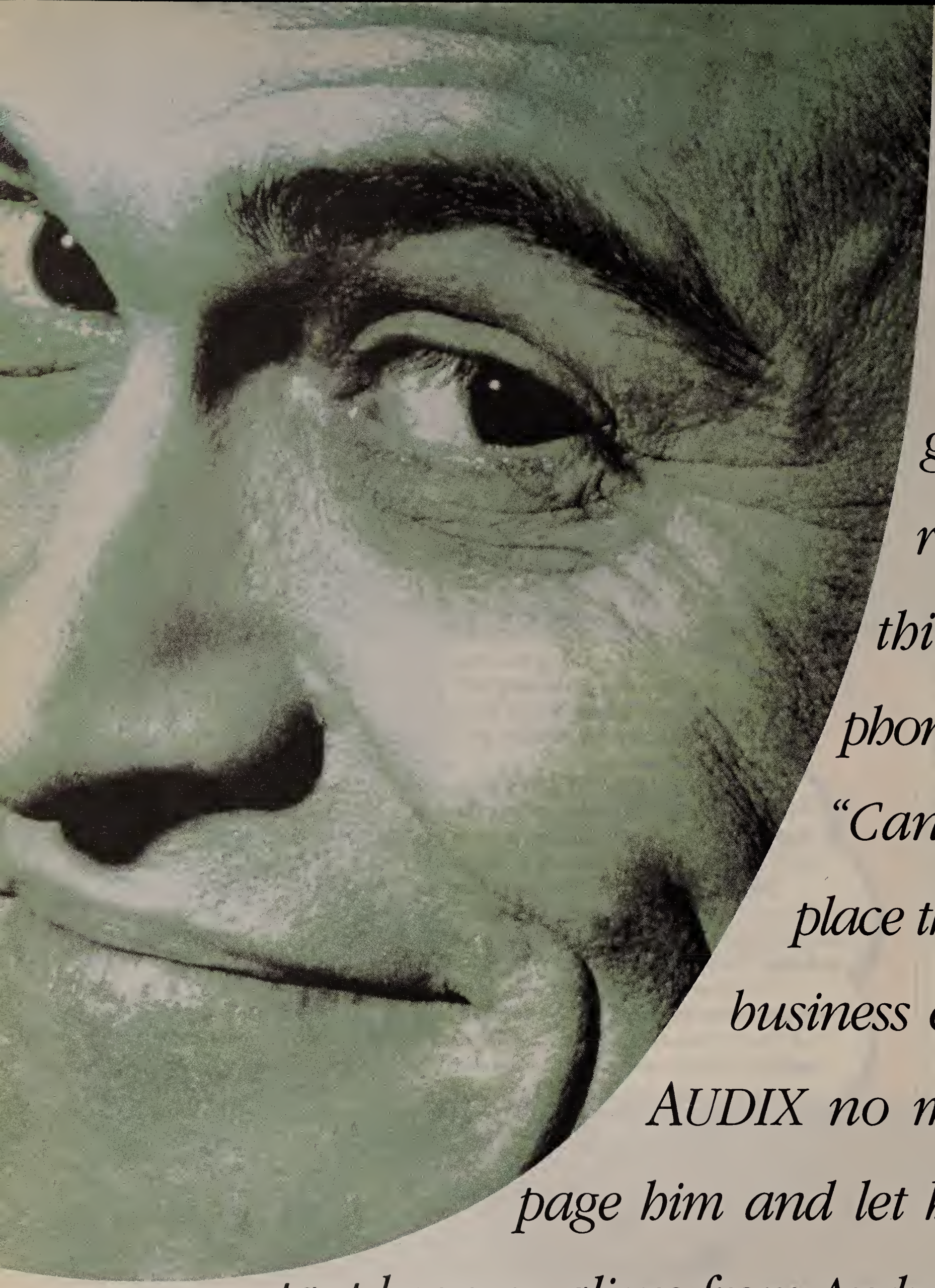
See The FAXNeT Form on Page 20



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At this point I'm put on hold. And it is my hope that if
not currently suffering the indignity of the hold button.

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